

# Riverbend Park

## Draft Environmental Impact Report

State Clearinghouse No. 2003022073

Feather River Recreation and Park District

July 2003





**RIVERBEND PARK  
DRAFT ENVIRONMENTAL IMPACT REPORT**

**State Clearinghouse # 2003022073**

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## LIST OF ACRONYMS

af	acre-feet
ARB	State of California Air Resources Board
bgs	below ground surface
BMPs	best management practices
BO	Biological Opinion
CAAQS	California Ambient Air Quality Standards
CBC	California Building Code
CDFG	California Department of Fish and Game
CDMG	California Department of Mines and Geology
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CMP	Congestion Management Plan
CNDDB	CDFG's California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
COCs	constituents of concern
CPUC	California Public Utilities Commission
CRHR	California Register of Historic Resources
CWA	Clean Water Act
dB	decibel
dBA	unit of noise measurement on an A-weighted scale
DEIR	Draft Environmental Impact Report
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EMS	emergency medical services
EMT	emergency medical technician
EPA	United States Environmental Protection Agency
ESA	federal Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
fps	feet per second
FRRPD	Feather River Recreation and Park District
FS	factor of safety
G	unit of measurement describing shear modulus value of soils

GPA	General Plan Amendment
gpm	gallons per minute
gWh	gigawatt hours
HCM	Highway Capacity Manual
HVAC	heating, ventilating and air conditioning
I	Interstate
I&I	inflow and infiltration
IPM	Integrated Pest Management
IS	Initial Study
ITE	Institute of Transportation Engineers
IWWC	industrial wastewater collection
kV	kilovolts
kWh	kilowatt-hours
Ky	unit of measurement describing yield acceleration of soils
Leq	energy equivalent noise level
LOD	level(s) of service
LTMS	Long-Term Management Strategy
MBTA	Migratory Bird Treaty Act
mgd	million gallons per day
MLLW	mean lower low water
MM	Modified Mercalli scale
msl	mean sea level
mW	megawatts
Mw	moment magnitude
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NO <sub>2</sub>	nitrogen dioxide
NOC	Notice of Completion
NOP	Notice of Preparation
NO <sub>x</sub>	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPSC	Non-Point Source Task Force
NRHP	National Register of Historic Places
O <sub>3</sub>	ozone
PAHs	polynuclear aromatic hydrocarbons
Pb	lead

PCBs	polychlorinated biphenyls
PG&E	Pacific Gas and Electric Company
PM2.5	fine particulate matter 2.5 microns in size or less
PM10	particulate matter 10 microns in size or less
ppm	parts per million
Project	Riverbend Park
PS	pump station
psi	pounds per square-inch
PVC	polyvinyl chloride
R&D	research and development
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
sf	square feet
SHPO	California State Historic Preservation Office
SHRC	State Historical Resources Commission
SLC	State Lands Commission
SO2	sulfur dioxide
SOV	single occupancy vehicle
SPCRR	South Pacific Coast Railroad
SR	state route
STIP	State Transportation Improvement Program
SWMDCP	Stormwater Management and Discharge Control Program
SWRCB	California State Water Resources Control Board
TAC	Toxic Air Contaminants
TCMP	Traffic Capacity Management Procedure
TCP	Traffic Control Plan
TDS	total dissolved solids
TES	threatened or endangered species
tpd	tons per day
TSM	Transportation Systems Management
TDM	Transportation Demand Management
UBC	Uniform Building Code
US	United States
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
V/C	volume-to-capacity ratio
VOCs	volatile organic compounds
vpd	vehicles per day
WWTP	wastewater treatment plant

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## **1.0 INTRODUCTION**

This Draft Environmental Impact Report (EIR) provides an assessment of the Riverbend Park Project (Project), a proposed regional park on a 120-acre site in the center of Oroville, adjacent to the Feather River. The northern approximately 58 acres of the site are located within Oroville; the southern approximately 62 acres of the site are located on unincorporated Butte County land that is leased from the California Department of Fish and Game (CDFG) by the Feather River Recreation and Park District (FRRPD).

This EIR presents a project-level analysis of the proposed park. The EIR is designed to inform the FRRPD decision-makers, responsible agencies and the public of the environmental consequences of development of the Project. The FRRPD is the Lead Agency for the EIR.

### **1.1 PURPOSE OF THIS EIR**

As the Lead Agency, the FRRPD has prepared this EIR to assess the impacts of the development of the Project. The EIR has been prepared pursuant to CEQA (Public Resources Code §21000 et seq.) and the State CEQA Guidelines (California Code of Regulations, §15000 et seq.), as amended. CEQA requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority.

This EIR is a public document that discloses the significant environmental impacts of the Project and measures to reduce these effects; impacts that cannot be avoided; growth-inducing impacts; effects found not to be significant; and significant cumulative impacts of past, present and reasonably foreseeable future projects.

This EIR is an informational document that is to be used in the planning and decision-making process. It is not the purpose of an EIR to recommend approval or denial of a project. CEQA requires decision-makers to balance the benefits of a project against its unavoidable environmental risks. If environmental impacts are identified as significant and unavoidable, the FRRPD may still approve the project if it believes that social, economic, or other benefits outweigh the unavoidable impacts. The FRRPD would then be required to state, in writing, the specific reasons for approving the Project based on information in the EIR and other information on record. This reasoning is called a “statement of overriding considerations” (CEQA Guidelines, §15093).

## 1.2 FOCUS OF THIS EIR

The focus of this EIR was established by the FRRPD after carrying out an Initial Study. The FRRPD issued a Notice of Preparation and an Initial Study on February 19, 2003, which is included as Appendix A. The purpose of an Initial Study is to identify possible environmental consequences and thereby focus the EIR on potentially significant impacts.

The Initial Study found that the Project would not result in potentially significant impacts to agricultural resources, mineral resources, or population and housing (see Section 1.3). The EIR therefore addresses the following issues:

1. Land Use, Planning and Recreation
2. Aesthetics
3. Public Utilities and Services
4. Hydrology and Water Quality
5. Cultural Resources
6. Biological Resources
7. Geology and Soils
8. Traffic and Transportation
9. Air Quality
10. Noise
11. Hazardous Materials

## 1.3 ENVIRONMENTAL EFFECTS FOUND NOT TO BE SIGNIFICANT

As allowed by 15063 of the CEQA Guidelines, issues can be identified as “not significant” or “less than significant” in the Initial Study (Appendix A). The Initial Study concluded that no impacts would occur to agricultural resources, mineral resources or population and housing as a result of the Project.

**Agricultural Resources.** The California Department of Conservation’s (CDC) Farmland Mapping and Monitoring Program designates important farmland in California. The Project area is not mapped as “Farmland” on the CDC’s Important Farmland Map. The Project site is not zoned for agricultural uses and there are no

existing Williamson Act Contracts. Additionally, the Project site is located on existing parkland and would not convert farmland to non-agricultural use either on or around the site. Therefore, it has been determined that the Project would not have an impact to agricultural resources.

**Mineral Resources.** The Project site is not known to contain any mineral resources that are important to the region or the State, nor is it delineated as a locally important mineral resource recovery site. In addition, substantial excavation is not anticipated, which could result in the loss of mineral resources, should they exist. Thus, no impacts to mineral resources would occur as a result of the Project.

**Population and Housing.** The Project does not include development of new homes or substantial commercial uses. The development components of the park plan include; expansion of existing park facilities, planting new vegetation and increasing bike paths. The improvements considered under the Project are intended to serve the existing Oroville population; therefore the Project would not induce substantial population growth. Since the Project site does not contain housing, development of the Project would not introduce additional housing stock into the community.

## 1.4 REPORT ORGANIZATION

This Draft EIR is organized into the following chapters:

- **Chapter 1: Introduction.** This chapter provides an introduction and overview describing the focus of the EIR and the environmental review process.
- **Chapter 2: Summary.** This chapter summarizes environmental consequences that would result from the Project. The chapter provides a summary table that denotes anticipated significant environmental impacts, describes recommended mitigation measures, and indicates the level of significance of impacts before and after mitigation.
- **Chapter 3: Project Description.** This chapter describes the Project components including figures, in detail.
- **Chapter 4: Environmental Evaluation.** This chapter describes the existing conditions and evaluates the environmental impacts of the Project including mitigation measures to reduce their significance. Applicable regulatory policies are also described.

- **Chapter 5: Cumulative Impacts.** This chapter describes the cumulative impacts resulting from completion of other developments in combination with the Project. Lists provided by the City of Oroville and the Department of Water Resources (DWR) identify development proposals that are currently in the approval or planning process for the area surrounding the Project site.
- **Chapter 6: Alternatives to the Project.** This chapter considers alternatives to the Project that could reduce one or more of the significant environmental impacts identified in Chapter 4. This chapter includes an analysis of the No Project Alternative as required by CEQA.
- **Chapter 7: Growth Inducement.** This chapter evaluates the possible impact that the Project would have in inducing growth in Oroville. Because the Project does not include housing and commercial uses, it would not be expected to induce growth.
- **Chapter 8: CEQA-Required Analyses.** This chapter provides a discussion of the following CEQA-mandated findings: unavoidable significant effects, and significant irreversible environmental changes that would be involved in the Project should it be implemented.
- **Chapter 9: Report Preparation and References.** This chapter identifies the references, organizations and persons consulted, as well as the authors of this EIR.

## 1.5 ENVIRONMENTAL REVIEW PROCESS

Consistent with CEQA, affected agencies, organizations, and persons who may have an interest in this Project were contacted during preparation of the EIR. This included circulation of a Notice of Preparation (NOP) on February 19, 2003, which began a 30-day comment period. In addition, early consultation with the community, relevant agencies, organizations and individuals facilitated the preparation of this EIR. In particular, the California Department of Fish and Game (CDFG), United States Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and the United States Army Corps of Engineers (USACE) were consulted.

The FRRPD has filed a Notice of Completion (NOC) with the Governor's Office of Planning and Research, State Clearinghouse, indicating that this Draft EIR has been completed and is available for review and comment by the public. A notice of availability of the Draft EIR and the date, time, and location for the initial public hearing, which will be held to discuss the Draft EIR and the Project, has been published



concurrently with the distribution of this document. A 45-day review period (from the date of the notice of availability) will be provided for the Draft EIR.

Reviewers of this Draft EIR should focus on the sufficiency of the document in identification and analysis of the possible impacts of the Project on the environment, and the ways in which the significant effects of the Project might be avoided or mitigated.

Comments may be made on the Draft EIR either in writing, before the end of the comment period, or orally during the public hearing. Following the close of the public comment period, responses to comments on the Draft EIR will be prepared and published as a separate document. The Draft EIR text and technical appendices, together with the responses to comments, constitute the Final EIR.

Written comments on the Draft EIR should be sent to:

**Robert Sharkey, Superintendent**  
**Feather River Recreation and Park District**  
**1200 Myers Street**  
**Oroville, CA 95965**

The FRRPD will review the Final EIR for adequacy and consider it for certification pursuant to the requirements of Section 15090 of the State CEQA Guidelines. If the District certifies the Final EIR and decides to approve the Project, findings on the feasibility of reducing or avoiding significant environmental effects will be made and, if necessary, a statement of overriding considerations would be prepared. If the FRRPD approves the Project after completion of these tasks, a Notice of Determination (NOD) would include, among other items (as required by Section 15094 of the State CEQA Guidelines), information on the Project approval. Such information would include a description of the Project, the date of approval, an indication of whether findings and a statement of overriding considerations were prepared, and the address of where the Final EIR and record of Project approval are available for review.

## **1.6 INTENDED USES OF EIR**

Following certification of the Final EIR, FRRPD would use the EIR as the environmental documentation supporting the Riverbend Park conceptual plan. Should any approvals by FRRPD include significant unavoidable environmental impacts, FRRPD would need to adopt a statement of overriding considerations, as required by

CEQA. Final design approval of the building and landscaping could require subsequent CEQA review of the more detailed plans.

## **1.7 REQUIRED PERMITS**

Permits for the Project would be required from the Regional Water Quality Control Board (RWQCB), the Butte County Air Quality Management District (BCAQMD), US Army Corps of Engineers (USACE), Butte County Department of Public Works, City of Oroville Department of Public Works, the California Department of Fish and Game (CDFG), and DWR. The Project would require all mandatory FRRPD approvals.

## **2.0 SUMMARY**

This summary presents an overview of the environmental analysis of the Riverbend Park EIR, which is contained in further detail in Chapter 4 of this Draft EIR. Section 15123 of the State CEQA Guidelines requires that an EIR summary identify the following: 1) each significant impact with proposed mitigation measures and alternatives that would reduce or avoid that impact, 2) areas of controversy known to the Lead Agency including issues raised by agencies and the public, and 3) issues to be resolved including the choice among alternatives and whether or how to mitigate the significant impacts.

### **2.1 PROJECT UNDER REVIEW**

The Riverbend Park Project (Project), proposes improvements to the existing 120-acre Riverbend Park located directly to the west of Highway 70, north of Highway 162 and east of the Feather River. The Project includes buildings, outdoor park facilities, as well as increased landscaping on the site.

The Project would construct access roads, hiking trails, a bike path extension, parking areas, and public restrooms. Utilities, including water, electricity, and sewer connections, would be extended to the Project site. The Project would also involve revegetation, irrigation and landscaping activities, as well as grading activities that would mostly involve the recontouring of piles, pits, and ditches that exist on-site from previous rock quarry operations.

### **2.2 AREAS OF CONTROVERSY / ISSUES TO BE RESOLVED**

The FRRPD issued an Initial Study and a NOP on February 19, 2003, which is included as Appendix A to this EIR. Several areas of concern were raised in response to the NOP. Responses to the NOP came from the Department of Water Resources (DWR), Butte County Air Quality Management District (BCAQMD), California Regional Water Quality Control Board (CRWQCB), and the California Department of Fish and Game (CDFG). The primary issue raised by the agencies related to permits that would be required prior to project construction. All of the commenting agencies noted applicable permits, such as the Section 404 and dewatering permits from CRWQCB, or the Lake or Streambed Alteration Agreement from CDFG.

## 2.3 SIGNIFICANT ENVIRONMENTAL IMPACTS

According to the CEQA Guidelines, a “significant effect on the environment” means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the Project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance (CEQA Guideline Section 15382).

Implementation of the Project would have the potential to generate significant environmental impacts. Impacts related to the following environmental topics would be significant without the implementation of mitigation measures, but would be reduced to a less-than-significant level with the implementation of mitigation measures recommended in this Draft EIR.

- Aesthetics;
- Cultural Resources;
- Biological Resources; and
- Geology and Soils;

These significant impacts are summarized in Table 2-1, which is presented at the end of this chapter. This Draft EIR suggests specific mitigation measures that, if implemented, would reduce all impacts to less-than-significant levels.

More detail on these impacts is provided in the summary table at the end of this chapter, as well as in the detailed technical analyses presented in Chapter 4 of this Draft EIR.

## 2.4 ALTERNATIVES TO THE PROJECT

CEQA guidelines section 15126(d) requires the lead agency to consider alternatives to the Project that meet the Project’s basic objectives, while avoiding or reducing significant impacts. CEQA also requires consideration of the No Action Alternative. The following alternatives are considered in Chapter 6 of the EIR.

- Alternative 1: No Project
- Alternative 2: Cluster Development
- Alternative 3: Passive Recreation

The development alternatives would meet the overall goals and objectives that the FRRPD established for Riverbend Park, but with slightly different focuses. The Cluster Development Plan would provide a full range of program elements, while minimizing

the amount of developed area. The Passive Recreation Alternative would include fewer built areas and a more rigorous restoration plan.

CEQA also requires the identification of the environmentally superior alternative. Based on the information in Chapter 6, and in accordance with CEQA, the Passive Recreation Alternative would be the environmentally superior development alternative. This alternative would reduce the number of structures (including parking areas) on the site while continuing to provide the community recreation experience. The reduced impervious surfaces would reduce the amount of runoff. With a lower amount of infrastructure, fewer new utilities and public services would be needed at the Project site.

## **2.5 SUMMARY TABLE**

Table 2-1 describes the significant impacts of the Project, measures identified in the EIR to mitigate the significant impacts, and the level of significance of the impacts after implementation of the mitigation measures. Chapter 4 provides a comprehensive analysis of significant and less than significant impacts of the Project.

**Table 2.1**  
**Summary of Significant Project Impacts**

SIGNIFICANT IMPACT	MITIGATION MEASURE(S)	SIGNIFICANCE AFTER MITIGATION
<b>Aesthetics</b>		
There are currently only 3 lights located on the Project site, all of which are at the entrance. The addition of 40 new 14-foot to 18-foot tall lighting structures placed throughout the site, 3 safety up-lights for the two new buildings, and 9 interior lights for the group picnic areas would represent a noticeable change to existing nighttime conditions due to the remoteness of the site to the west of Highway 70. The new lighting on the Project site would be clearly visible to nearby residents on the bluff to the west as well as those traveling along Highway 70, to the east. The introduction of additional lighting and new facilities onto the Project site would change the visual relationship of the site to the surrounding landscape and would therefore represent a <i>significant impact</i> without any mitigation measures. Lighting would be designed in a manner that would not adversely affect sensitive biological receptors while at the same time providing security.	<ol style="list-style-type: none"> <li>1. Utilize directional or shielded lighting where possible, and only areas required for security would be constantly lit during night hours. Install switches on all nighttime lighting fixtures that are not constantly needed for security purposes. Build all new structures with non-reflective paints, so as to avoid any unnecessary nighttime glare. Design structures in a manner where they do not have the possibility to cause reflection or glare into the traffic on the surrounding Highways (no mirror windows).</li> <li>2. Light only the 10 necessary security lights during nighttime hours. All other lights would have timers, or manual on-off switches.</li> <li>3. Use “spot-lighting” only when directed at the base portion (below 5 feet in height) of new buildings.</li> <li>4. Place new buildings on the Project site in a manner that makes them most visually appealing to drivers on Highway 70, with non-reflective surfaces to avoid shine onto the highway.</li> </ol>	Less than Significant
<b>Cultural Resources</b>		
The Project site has not had a detailed survey for archaeological resources. There is always a chance that such resources may become apparent once vegetation is removed or during construction excavation. Indicators of prehistoric site activity include charcoal, obsidian or chert flakes, grinding bowls, shell fragments, bone, and pockets of dark friable soils. The disturbance of archaeological resources including human remains as a result of the development of the Project would constitute a <i>significant impact</i> .	If previously unknown archaeological resources or suspected archaeological resources (including human remains) are encountered during construction, all work on the site would be stopped and an archaeologist approved by the FRRPD would be called to inspect the finds. The recommendations of this archaeologist with regard to on-site preservation, recovery and/or documentation of the resources would be implemented before construction re-commences.	Less than Significant
The site has no known paleontological resources or unique geologic features that would suggest the presence of these resources. However, it is possible that unknown paleontological resources could be discovered during the development of the Project, which would represent a <i>significant impact</i> .	If paleontological resources are encountered during construction, all work in the immediate vicinity of the find would be halted and the proper authorities would be notified.	Less than Significant

**Table 2.1**  
**Summary of Significant Project Impacts**

SIGNIFICANT IMPACT	MITIGATION MEASURE(S)	SIGNIFICANCE AFTER MITIGATION
<p>The site has no known human remains, including those interred outside of formal cemeteries. However, it is impossible to be sure about the presence or absence of human remains on a site until site excavation and grading occurs. The disturbance of human remains during the development of the Project would constitute a <i>significant impact</i>.</p>	<p>As required by State law, in the event that such remains are encountered, there would be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains. The coroner would be contacted and appropriate measures implemented. These actions would be consistent with the State Health and Safety Code Section 7050.5, which prohibits disinterring, disturbing, or removing human remains from any location other than a dedicated cemetery.</p>	<p>Less than Significant</p>
<b>Biological Resources</b>		
<p>The Project site contains elderberry bushes that provide habitat for the valley elderberry longhorn beetle, which is a federally-listed threatened species. Due to the “threatened” status of this beetle, disturbance of the elderberry bushes would constitute a <i>significant impact</i>. The Project incorporates a 20-foot setback between every elderberry bush and Project features, including construction activities. Additional mitigation measures are necessary to prevent “take” of this species.</p>	<ol style="list-style-type: none"> <li>1. Install construction barrier fencing and minimize disturbance to elderberry shrubs. Barrier fencing would be installed 3 feet from the drip line for six elderberry shrubs growing adjacent to the road, approximately 15 feet from the drip line for 2 bushes growing 15 feet from the park road, and 20 feet from the drip line for all other elderberry plants. Construction barrier fencing would be installed around the base of the elderberry shrubs before construction activities begin. Barrier fencing would be installed to avoid disturbance to the root and branch systems of the shrubs. During construction, maintenance would be performed to keep the fence in good repair. Construction vehicles, equipment and materials would not be parked or stored in the fenced area. Signs posted around the fenced shrubs would read as follows:   <i>“This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the federal Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines and imprisonment.”</i>   The signs would be readable from a distance of 20 feet and would be maintained for the duration of construction. </li> <li>2. All construction workers would be instructed about the status of the beetle and the need to protect it and its habitat.</li> <li>3. Construction staging or storing areas would be located at least 20 feet away from any elderberry shrub drip line.</li> </ol>	<p>Less than Significant</p>

**Table 2.1**  
**Summary of Significant Project Impacts**

SIGNIFICANT IMPACT	MITIGATION MEASURE(S)	SIGNIFICANCE AFTER MITIGATION
	<p>4. No trimming of elderberry branches of any size would occur during construction.</p> <p>5. Biological monitors would examine the elderberry shrubs on a daily basis for the first month of construction and thereafter on a weekly basis if the construction workers are adequately protecting the elderberry bushes.</p>	
<p>The special-status species that could occur in the Feather River beside the Project site are: spring-run chinook salmon (federally- and state-threatened), fall-run chinook (federal candidate and California species of special concern), the Central Valley evolutionary significant unit of steelhead (<i>Oncorhynchus mykiss</i>) (federally-threatened and California species of special concern), Sacramento splittail (federally-threatened and California species of special concern), green sturgeon (Federal Candidate and California species of special concern), hardhead (California species of special concern), and river lamprey (California species of special concern). Retrofit of the boat ramp could affect special-status fish species. The construction of the boat ramp entails use of steel sheeting to separate the construction area from the rest of the river. Fish species could become trapped within the area enclosed by the steel plating, representing a <b>significant impact</b>.</p> <p>In addition to directly trapping special-status fish species, the retrofitting of the boat ramp could generate sediment that could affect downstream water quality and spawning areas, therefore representing a <b>significant impact</b>.</p>	<p>1. A biological monitor would be present to ensure that no special-status fish are trapped behind the metal sheeting. Any trapped special-status fish would be allowed to swim free and the sheeting would be reinstalled. Any other fish species that are not special-status would be captured and removed from the enclosed area.</p> <p>2. Retrofitting of the boat ramp entails pumping the water from the construction area. The steel sheeting, in conjunction with pumping, prevents the water from entering the area. Nevertheless, if sediment is observed escaping from the construction area, then a curtain would be hung around the steel sheeting to contain the sediment.</p> <p>3. A construction worker training program would be instituted to inform the workers of the sensitive fishery resources and the measures needed to protect the fish.</p> <p>4. A biological monitor would examine the boat ramp retrofit site on a daily basis to ensure that impacts are not occurring.</p>	Less than Significant
<p>Special-status raptors (osprey, Cooper's hawk, western burrowing owl, long-eared owl) and common raptors (red-tailed hawk, red-shouldered hawk, and great-horned owl) could nest in the riparian woodland of the Project site. Other species of special-status birds (willow flycatcher, loggerhead shrike, yellow warbler, yellow-breasted chat) could also nest in the riparian woodland or otherwise on-site. Construction activity at the park could affect the nesting of raptors including special-status raptors and cause them to abandon active nests. Construction activity could result in the destruction in the nests of these special-</p>	<p>1. A qualified biologist would conduct a survey for nesting raptors 21 days prior to the start of construction, if construction begins between January and the end of July within 250 feet of riparian woodland areas. A 250-foot buffer should be established around any active raptor nest thought to contain eggs or young. This buffer should be maintained until the young have fledged. The nest site should be monitored and upon fledging of the young, the monitor would notify the Feather River Recreation and Park District. Construction can then continue within 250 feet of the nest upon</p>	Less than Significant



**Table 2.1**  
**Summary of Significant Project Impacts**

SIGNIFICANT IMPACT	MITIGATION MEASURE(S)	SIGNIFICANCE AFTER MITIGATION
status bird species.	<p>fledging of the young.</p> <p>2. A qualified biologist would conduct a survey for nesting birds 21 days prior to the start of construction within 250 feet of riparian woodlands. This survey would be conducted from March through July. If construction begins prior to March and is within 50 feet of riparian woodlands, no survey needs to occur because the birds would either be accustomed to the construction activity or would choose to nest else where. (No birds would be forced from a nest.) A buffer of 150 feet should be established around any nests of willow flycatchers discovered during the survey while buffers of 50 feet would be established around yellow warbler, loggerhead shrike, and yellow-breasted chat nests. The reason for the different buffers is because the willow flycatcher is a state-listed species while the others are species of special concern, a less sensitive category of special-status species. As with the raptor nests, any of these nests found on-site should be monitored until fledging. Construction can resume within the buffered area upon fledging of the young.</p>	
<p>Wetlands are valuable biological resources that provide important ecosystem functions especially regarding protection of water quality and enhancing biological diversity. Regulatory agencies such as the U.S. Army Corps of Engineers and the Water Resources Control Board regulate impacts to wetlands. The Project could affect jurisdictional wetlands. The wetlands are located at the edge of the Feather River including the area beside the boat ramp and in depressions in the central portion of the Project site. Retrofit of the boat ramp could affect a small amount of adjacent wetland and the location of the handicap fishing and picnic areas along the edge of the river could affect wetlands. The Project description calls for planting over more than one acre around the existing detention pond with native wetland vegetation. However, regulatory agency policies require that impacts to wetlands be avoided where feasible, therefore impacts to jurisdictional wetlands are <i>significant</i> without mitigation.</p>	<p>1. Construction fencing would be placed at the edge of the wetland area to prevent access. The fencing would be monitored on a daily basis for the first month and weekly thereafter to ensure that it was effective in precluding access to the wetland area.</p> <p>2. Any wetland disturbed as part of the retrofit of the boat ramp would be limited to a small area extending for no more than 10 feet on either side of the boat ramp. Any wetland vegetation disturbed would be re-established on-site at the area of effect. The restored wetland would be monitored for 3 years to ensure that the same wetland values are replaced.</p>	Less than Significant

**Table 2.1**  
**Summary of Significant Project Impacts**

SIGNIFICANT IMPACT	MITIGATION MEASURE(S)	SIGNIFICANCE AFTER MITIGATION
<b>Geology and Soils</b>		
Due to the proximity of the Project site to the Feather River, there is a moderate to high risk of liquefaction of the soils developed upon (as noted in the Oroville General Plan). This represents a <i>significant impact</i> .	The Project applicant would have a geotechnical report completed prior to Project approval to ensure that the potential for liquefaction of the soil represents a less than significant impact.	Less than Significant**

\*It is assumed that all applicable regulations and policies noted in each resource section would be abided by. It is furthermore assumed that implementation of all applicable Best Management Practices would occur.

\*\*It is assumed that the Geotechnical Report would conclude that the liquefaction potential on the Project site is less than significant.

Source: EDAW, 2003

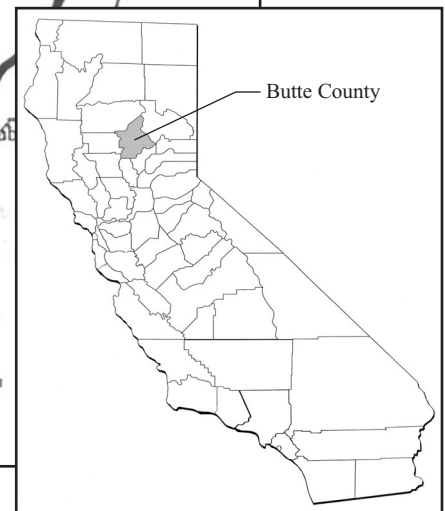
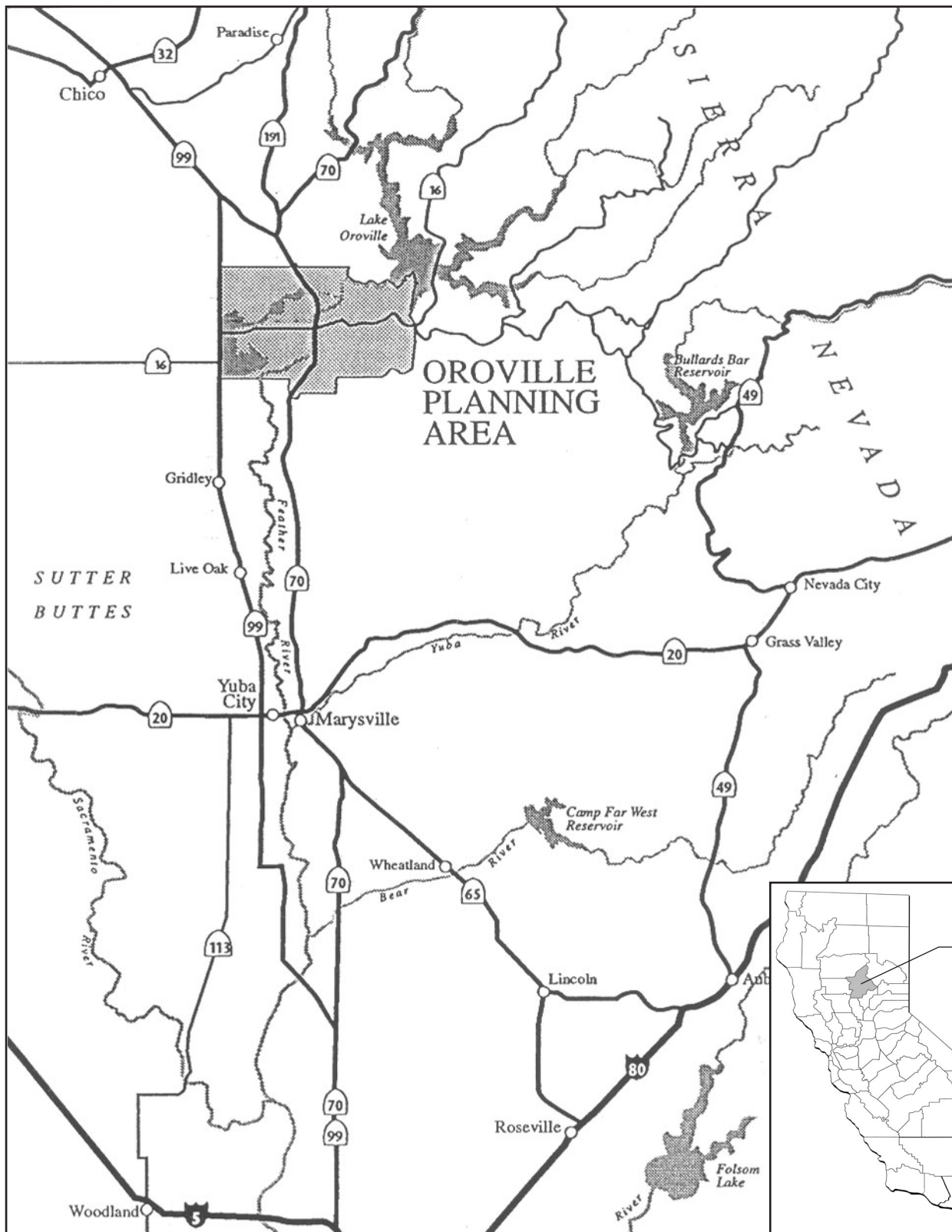
## **3.0 PROJECT DESCRIPTION**

The Riverbend Park Project (Project) includes development of a river-oriented regional park and associated facilities on approximately 120-acres along the Feather River, including open space/landscaped areas, picnic areas, an Ecology building, a Recreation, Natural History, Chamber of Commerce and Concession building, a boat ramp, and outdoor interpretive areas. The Project would involve construction of access roads, hiking trails, a bike path extension, parking areas, and public restrooms. Utilities, including water, electricity, and sewer connections, would be extended to the Project site. A temporary visitor's facility for the Chamber of Commerce would be located in the park. The Project also would include revegetation, irrigation and landscaping activities, as well as the recontouring of piles, pits, and ditches that exist on site from previous rock quarry operations.

### **3.1 PROJECT LOCATION**

The Project site is located within Oroville, in Butte County, California, about 25 miles southeast of Chico, as shown in Figure 3-1. The Oroville General Plan designates the Project site as parkland. The site slopes from east to west, with elevations ranging from 135 to 160 feet above mean sea level. The northern approximately 58 acres of the site are located within Oroville, and are under the ownership of the FRRPD; the southern approximately 62 acres of the site are leased from the CDFG by the FRRPD, yet fall under the jurisdiction of Butte County.

The site is bordered by the Feather River to the north and west, Highway 70 to the east, and Highway 162 (Oroville Dam Road and Randy Jennings Memorial Bridge) to the south (see Figure 3-2). Lands to the east are comprised mainly of retail and business services. Lands to the south consist of a 100+ acre park (Oroville Wildlife Fishing Ponds). Lands to the north and west on the opposite side of the Feather River consist of mostly medium-density and some high-density residential developments.



Source: City of Oroville General Plan EIR 1995

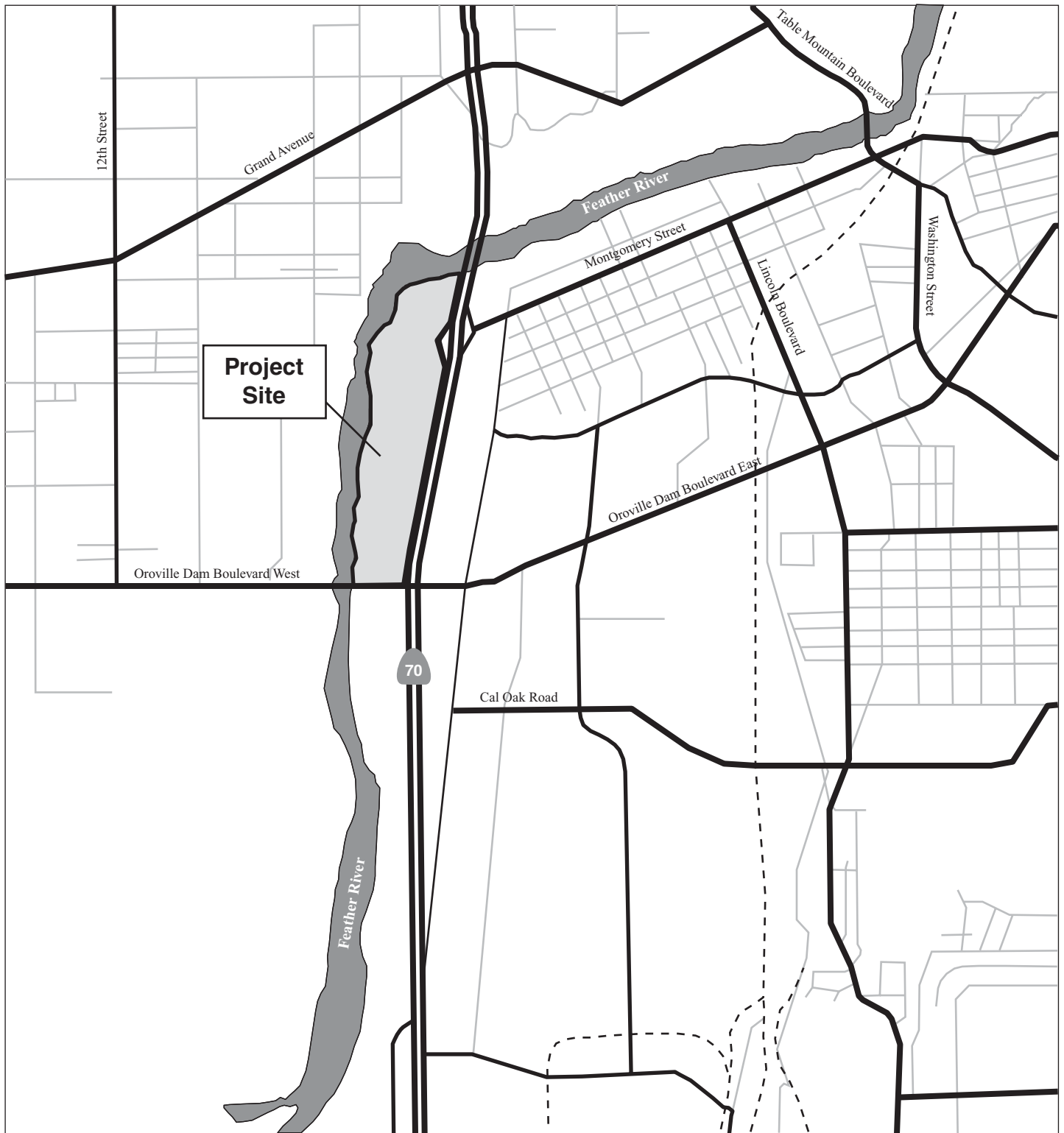
## Riverbend Park

Regional Map

**Figure 3-1**



EDAW



Source: City of Oroville General Plan 1995

0 1000' 2000' 4000' 1 Mile



EDAW

# Riverbend Park

Location Map

**Figure 3-2**

## **3.2 RELATED ENVIRONMENTAL DOCUMENTS**

### **3.2.1 Feather River Enhancement Project EIR**

The Feather River Enhancement Project EIR was prepared by the California Resources Agency to analyze environmental impacts associated with the development of a recreation project along the Feather River in the Oroville vicinity, designed to help mitigate negative effects to the region resulting from the construction of Oroville Dam. The Riverbend Park site is among the regions included in the EIR analysis for development of recreation facilities. The EIR was finalized in 1977.

### **3.2.2 Feather River Bikeway Project Environmental Assessment/Initial Study**

This Environmental Assessment/Initial Study was prepared in February 2000 by the City of Oroville Public Works Department. The document analyzes environmental impacts associated with the proposed construction of a Class I bikeway to provide an upstream and downstream connection of the existing Feather River Bikeway to Oroville Boulevard at the State Highway 162 and State Highway 70 interchange. A portion of the bikeway is proposed for development on the Riverbend Park site.

## **3.3 GOALS OF THE PROJECT**

The basic goals and objectives for developing the Project are to:

- Create a river-oriented, regional-type park to serve both residents and visitors to the Oroville area;
- Provide a connection from the existing bike path to the nearby wildlife area;
- Utilize previously disturbed land to support leisure and recreation activities; and
- Enhance visitor experience and provide revenue to support the recreation opportunities provided in the park.

## **3.4 PROJECT CHARACTERISTICS**

### **3.4.1 Park Concept Plan**

Riverbend Park would be a river oriented, regional type park operated by the FRRPD (Figure 3-3). The park would be free-of-charge and open to the public. Park hours of operation would likely be from sunrise to sunset, with the exception of special nighttime events. The concept plan includes a Recreation, Natural History, Chamber of

Commerce and Concession building, a temporary module building for the Chamber of Commerce, an Ecology Nature Center, outdoor interpretation centers, outdoor recreation facilities, an improved boat launch ramp and trails.

***The Recreation, Natural History, Chamber of Commerce and Concession Building***

The Recreation, Natural History, Chamber of Commerce and Concession Building, approximately 10,000 square feet in size, would house the headquarters of the FRRPD, as well as the Oroville Chamber of Commerce. Approximately 20 full time employees would work in the building. The building would include common staff areas, a reception area for visitors, and other associated infrastructure and community facilities. Temporarily, the Chamber of Commerce would be based in a modular visitor/tourism building that would be located near the Recreation, Natural History, Chamber of Commerce and Concession Building.

The Recreation, Natural History, Chamber of Commerce and Concession building would be designed to aesthetically enhance the view of Riverbend Park from Highway 70. The architecture of the building would be “articulated” to provide visual interest by turning at an angle towards Highway 70 to reduce the amount of visible wall surface from some or all of the structures. Indigenous materials such as river rock would be incorporated into the architecture of the building and hardscape. The building pad would be elevated above 153.5 feet to prevent damage from flooding in the event of a 100-year or greater storm event.

Trees and landscaping would be planted to screen and soften the visual impacts of the parking lot and Project infrastructure. To reduce the amount of traffic noise, the outdoor areas would be sited to face away from Highway 70, allowing the buildings and vegetative screening to provide some sound attenuation.

***Temporary Modular for Chamber of Commerce***

A temporary Chamber of Commerce modular building and informational kiosk would be located near the Recreation, Natural History, Chamber of Commerce and Concession Building. The temporary modular would be approximately 1,040 square feet and would include three offices, a small conference room, a lobby, two restrooms, a kitchen and utility closets. The temporary modular would require an estimated six temporary parking spaces.

### ***Ecology Nature Center***

An Ecology Nature Center would be located on an existing flat, elevated area, composed of compacted tailings. The site is approximately 150 feet in elevation. This tailings “plateau” would be re-contoured and large shade trees would be planted on the east side. The elevated location would also provide an observation area for park docent, which would improve park security. The Ecology Nature Center would total 3,480 square feet in size, and would include two to three staff offices, two classrooms, and support facilities.

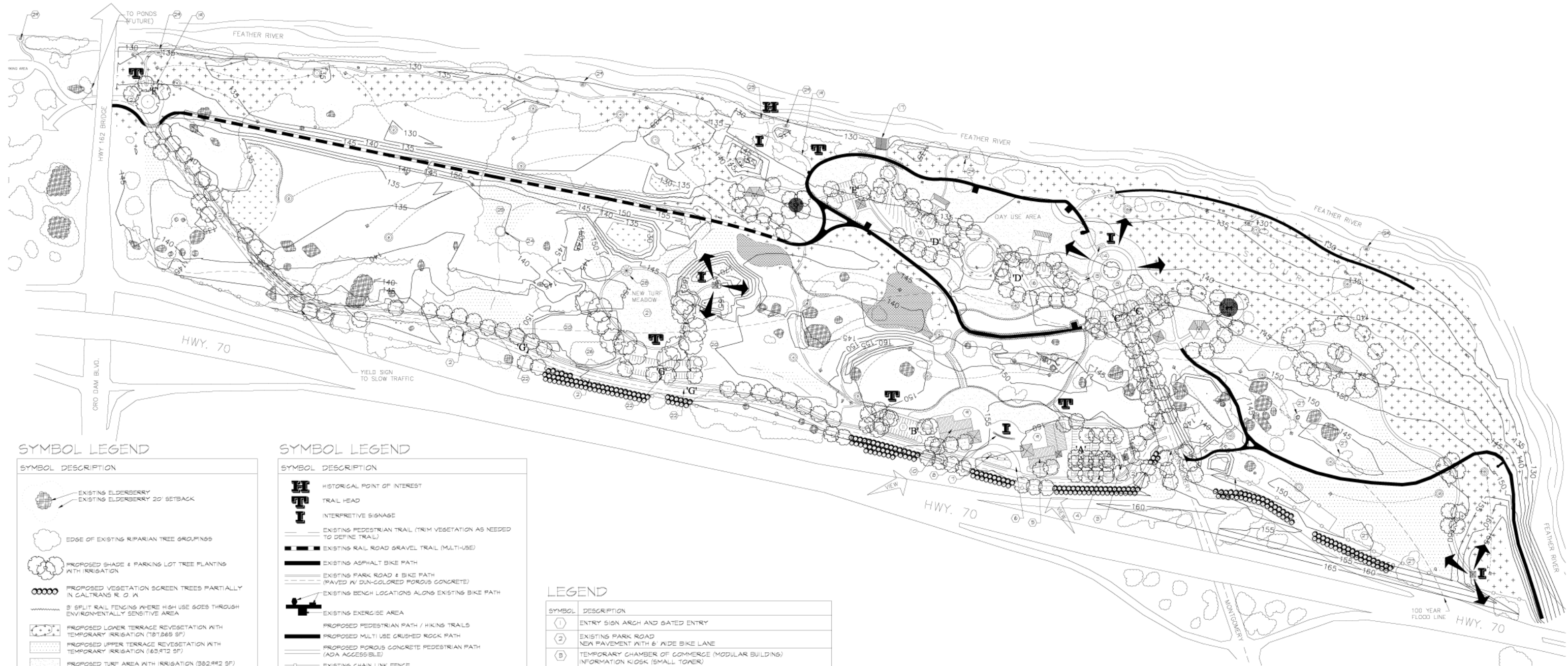
The architectural features of the Ecology Nature Center would be similar to those of the Recreation, Natural History, Chamber of Commerce and Concession Building, utilizing indigenous or recycled materials and environmentally sensitive design and technology. Design concepts to promote the theme of environmental sensitivity would include: utilizing active and passive solar energy; maximizing use of natural lighting; water conservation through native plant landscaping, efficient plumbing and irrigation; minimizing views of existing development (freeway, parking areas, or other man-made improvements); and promotion of art in a natural setting, including visual arts, theater, and music. Outdoor directional and/or shielded lighting would be provided for evening events. The location of lighting on the Project site is shown on Figure 3.4 (Park Lighting Plan).

### ***Outdoor Interpretation Areas***

A monument sign and gate would mark the entrance to the park. A kiosk (approximately 8 feet x 4 feet) outside the gate would provide information to visitors about the park.

Multiple outdoor interpretive areas would be developed throughout the park including: accessible walkways with interpretive signage for self-guided tours exhibiting information about riparian habitat, terrestrial wildlife, native birds and fish, Native American culture and historical displays (such as a round house built on the outskirts of the new turf meadow); a native garden for plant identification; and a “council ring”.





SYMBOL LEGEND

SYMBOL DESCRIPTION	
	EXISTING ELDERBERRY EXISTING ELDERBERRY 20' SETBACK
	EDGE OF EXISTING RIPARIAN TREE GROUPINGS
	PROPOSED SHADE & PARKING LOT TREE PLANTINGS WITH IRRIGATION
	PROPOSED VEGETATION SCREEN TREES PARTIALLY IN CALTRANS R.O.W.
	SPLIT RAIL FENCING WHERE HIGH USE GOES THROUGH ENVIRONMENTALLY SENSITIVE AREA
	PROPOSED LOWER TERRACE REVEGETATION WITH TEMPORARY IRRIGATION (181,865 SF)
	PROPOSED UPPER TERRACE REVEGETATION WITH TEMPORARY IRRIGATION (163,912 SF)
	PROPOSED TURF AREA WITH IRRIGATION (352,442 SF)
	EXISTING WETLAND (RETAIN AND PROTECT)
	EXISTING CITY STORM WATER DETENTION POND (RETAIN AND PLANT APPROPRIATE VEGETATION)
	EXISTING CONTOUR DESIGNATION
	ACCESSIBLE OVERLOOK TOWER WITH VIEW ARROWS (2 TOTAL) ARROWS ALSO NOTE VIEWS FROM OTHER LOCATIONS (STEEL STRUCTURE W/ STEEL ROOF & COBBLE STONE COLUMNS, COLOR: HUNTER GREEN)
	CHILDREN'S PLAY AREAS (2 TOTAL) (STEEL STRUCTURE WITH EARTHTONE COLORS, FALL MATERIAL TO BE FIBER WOOD CHIPS)

NOTES

- ALL CONSTRUCTION BELOW 100 YEAR FLOOD WILL BE REINFORCED TO WITHSTAND FLOWS.
- ELDERBERRY SETBACKS ADJACENT TO CONSTRUCTION WILL BE PROTECTED.
- ALL POROUS CONCRETE PATHS ARE ACCESSIBLE.
- REVEGETATION TECHNIQUE WILL VARY PENDING LOCATION AND PROXIMITY TO RIVER.
- IRRIGATION WILL BE PERMANENT IN DEVELOPED, LANDSCAPED AREAS AND TEMPORARY FOR REVEGETATION AND NATURALIZED AREAS.
- SECURITY LIGHTING W/ SOLAR FIXTURES WILL BE PROVIDED AT PARKING & TRAIL HEADS.
- PARKING FOR LARGE EVENTS WILL BE SHUTTLED AS WILL WALK IN FROM PERIMETER PARKING LOTS.

SYMBOL LEGEND

SYMBOL DESCRIPTION	
	HISTORICAL POINT OF INTEREST
	TRAIL HEAD
	INTERPRETIVE SIGNAGE
	EXISTING PEDESTRIAN TRAIL (TRIM VEGETATION AS NEEDED TO DEFINE TRAIL)
	EXISTING RAIL ROAD GRAVEL TRAIL (MULTI-USE)
	EXISTING ASPHALT BIKE PATH
	EXISTING PARK ROAD & BIKE PATH (PAVED W/ DUN-COLORED POROUS CONCRETE)
	EXISTING BENCH LOCATIONS ALONG EXISTING BIKE PATH
	EXISTING EXERCISE AREA
	PROPOSED PEDESTRIAN PATH / HIKING TRAILS
	PROPOSED MULTI-USE CRUSHED ROCK PATH
	PROPOSED POROUS CONCRETE PEDESTRIAN PATH (ADA ACCESSIBLE)
	EXISTING CHAIN LINK FENCE
	EXISTING STEEL RAIL FENCE (RELOCATE AS NEEDED)
	100 YEAR FLOOD PLAIN
	SINGLE PICNIC TABLE (36)
	ADA ACCESSIBLE POROUS CONCRETE PICNIC / FISHING AREA (3)
	24 PERSON SHADE STRUCTURE (4 TABLES / 1 BBQ) - (3) (STEEL STRUCTURE W/ STEEL ROOF & COBBLE STONE COLUMNS, COLOR: HUNTER GREEN)
	50 PERSON GROUP PICNIC AREA (4 TABLES / 2 BBQ) - (2) (STEEL STRUCTURE W/ STEEL ROOF & COBBLE STONE COLUMNS, COLOR: HUNTER GREEN)
	RESTROOM (2) PREFABRICATED RR W/ STEEL & STONE ENCLOSURE
	EXISTING NORTH COURSE DISC GOLF HOLES 1 THROUGH 16 EXISTING HOLES 1, 6, 9, 13, 14 AND 17 RELOCATED NEW SOUTH COURSE (1-9) STARTING AT HWY 162 TRAIL HEAD PARKING AREA 'F'
	DISC GOLF TEE
	DISC GOLF BASKET

LEGEND

SYMBOL	DESCRIPTION
(1)	ENTRY SIGN ARCH AND GATED ENTRY
(2)	EXISTING PARK ROAD NEW PAVEMENT WITH 6' WIDE BIKE LANE
(3)	TEMPORARY CHAMBER OF COMMERCE (MODULAR BUILDING) INFORMATION KIOSK (SMALL TOWER)
(4)	PARKING LOT 'A' (5) CAR SPACES) (3 BUS SPACES) OTHER PARKING LOTS (B,C,G,H,D) WILL SHUTTLE USERS TO BUILDINGS FOR LARGE EVENTS
(5)	RECREATION, NATURAL HISTORY, CHAMBER AND CONCESSION BUILDING
(6)	VISITOR DROP OFF AND TURN AROUND
(7)	FLAG POLE DISPLAY
(8)	HISTORICAL WALL WITH INTERPRETIVE PANELS
(9)	DEMONSTRATION COURTYARD
(10)	ECOLOGY BUILDING
(11)	PARKING LOT 'D' (37 SPACES) FOR ECOLOGY BUILDING AND TRAIL HEAD
(12)	PARKING LOT 'C' (36 PARKING SPACES)
(13)	RIVER VIEW / TURN AROUND WITH SHORT TERM PARKING
(14)	PUBLIC ART
(15)	GATED ENTRANCE
(16)	PARKING LOT 'D' POROUS PAVING (27 BOAT PARKING SPACES) (82 CAR PARKING SPACES)
(17)	NEW CONCRETE BOAT LAUNCH WITH POROUS PAVED PARKING AND STAGING AREA
(18)	PARKING LOT 'E' (18 SPACES)
(19)	PARKING LOT 'F' (10 SPACES) AND ROUND-A-BOUT
(20)	NATIVE GARDEN ARBORETUM WITH TEMPORARY IRRIGATION

LEGEND

SYMBOL	DESCRIPTION
(21)	NEW MEADOW (TURF WITH CONCRETE PATH SURROUND)
(22)	PARKING LOTS 'G' MEADOW AND TRAIL HEAD (37 PARKING LOT SPACES) (29 ROAD SIDE PARALLEL PARKING SPACES)
(23)	NORTHERN SACRAMENTO ABUTMENTS (RELIC CONCRETE ABUTMENTS) WITH INTERPRETIVE SIGNAGE
(24)	COUNCIL CIRCLE WITH EAST / WEST ORIENTATION
(25)	NATIVE MEADOW
(26)	HIMALAYA BERRY (TO BE REMOVED)
(27)	TREE OF HEAVEN (TO BE REMOVED)
(28)	ROUND HOUSE
(29)	ADA ACCESSIBLE PICNIC / FISHING AREA (6)



Riverbend Park  
Park Concept Plan

Figure 3-3 (back)





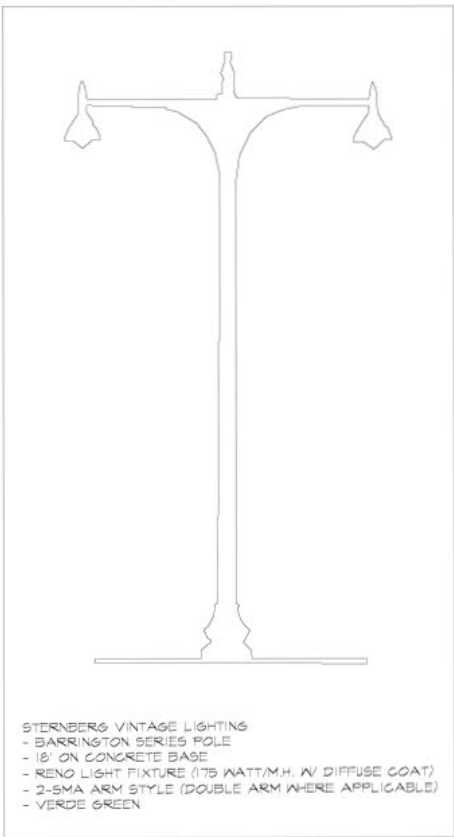
LIGHTING SYMBOL LEGEND

SYMBOL	DESCRIPTION	QTY
	PARKING LOT AND DRIVE LIGHT	25
	PEDESTRIAN PATHWAY LIGHT	15
	INTERIOR LIGHT (GROUP PICNIC AREAS)	4
	UP-LIGHT / SPOT LIGHT	2

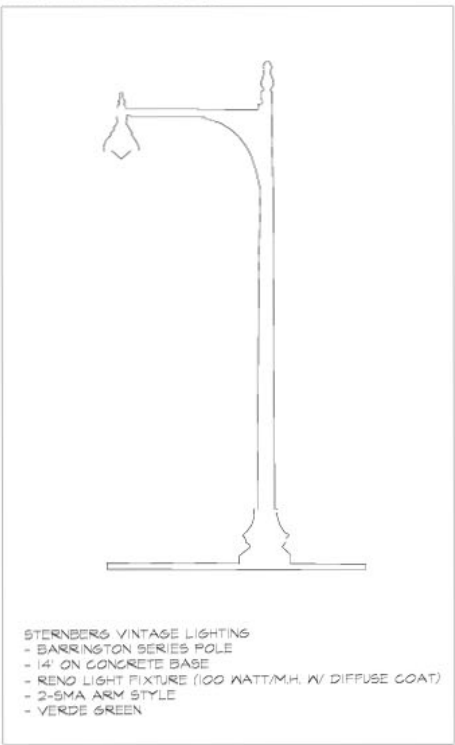
SYMBOL LEGEND

SYMBOL	DESCRIPTION
	HISTORICAL POINT OF INTEREST
	TRAIL HEAD
	INTERPRETIVE SIGNAGE
	EXISTING PEDESTRIAN TRAIL (TRIM VEGETATION AS NEEDED TO DEFINE TRAIL)
	EXISTING RAIL ROAD GRAVEL TRAIL (MULTI-USE)
	EXISTING ASPHALT BIKE PATH
	EXISTING PARK ROAD & BIKE PATH (PAVED W/ DUN-COLORED POROUS CONCRETE)
	EXISTING BENCH LOCATIONS ALONG EXISTING BIKE PATH
	EXISTING EXERCISE AREA
	PROPOSED PEDESTRIAN PATH / HIKING TRAILS
	PROPOSED MULTI-USE CRUSHED ROCK PATH
	PROPOSED POROUS CONCRETE PEDESTRIAN PATH (ADA ACCESSIBLE)
	EXISTING CHAIN LINK FENCE
	EXISTING STEEL RAIL FENCE (RELOCATE AS NEEDED)
	100 YEAR FLOOD PLAN
	SINGLE PICNIC TABLE (36)
	ADA ACCESSIBLE POROUS CONCRETE PICNIC / FISHING AREA (5)
	24 PERSON SHADE STRUCTURE (4 TABLES / 1 BBQ) - (3) (STEEL STRUCTURE W/ STEEL ROOF & COBBLE STONE COLUMNS, COLOR: HUNTER GREEN)
	50 PERSON GROUP PICNIC AREA (4 TABLES / 2 BBQ) - (2) (STEEL STRUCTURE W/ STEEL ROOF & COBBLE STONE COLUMNS, COLOR: HUNTER GREEN)
	RESTROOM (2) PREFABRICATED RR W/ STEEL & STONE ENCLOSURE
	EXISTING NORTH COURSE DISC GOLF HOLES 1 THROUGH 18 EXISTING HOLES 7, 8, 9, 13, 14 AND 17 RELOCATED NEW SOUTH COURSE (1-18) STARTING AT HWY 162 TRAIL HEAD PARKING AREA F

PARKING LOT LIGHT FIXTURE



PEDESTRIAN PATHWAY LIGHT FIXTURE

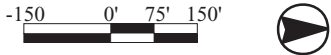


UP-LIGHT / SPOTLIGHT  
2 LOCATIONS)

- HADCO
- 14-H BRONZE IN-GROUND UP-LIGHT
- 120 VOLT, 150 WATT / M.H.

PATIO LIGHT (DOWN LIGHT)

- FAIL-SAFE
- SURFACE MOUNT
- ROUND LUMINAIRE, ALUMINUM W/ POLY LENS
- 100 WATT / M.H.



Riverbend Park  
Park Lighting Plan

Figure 3-4 (back)

### ***Outdoor Facilities and Trails***

A 1.5-mile loop trail consisting of packed gravel would be developed in the park. Bicycle racks, park benches and interpretive signage would be included at appropriate locations along the bicycle trail. The bicycle trail would be extended south to the Oroville Wildlife Fishing Ponds site.

An outdoor demonstration courtyard, a native meadow, and a new turf meadow would also be accessible to park users. There is substantial Elderberry habitat located on the Project site. A biological evaluation of the site (using GIS) indicated 64.8 acres of potential Elderberry habitat. The areas proposed to be developed with either recreation (disc golf, day use, play areas) or built features (buildings, roads, trails, parking lots, boat launch, picnic structures) would avoid these sensitive areas. The Project seeks to improve pedestrian safety and walkability of the area by improving the pedestrian pathway system, providing significantly expanded on-site parking and recreational uses, and locating surface parking areas near group recreation areas.

The existing boat launch ramp would be renovated. The upgraded boat launch ramp would extend 30 feet in width, allowing for simultaneous launch of two boats. There would be a six foot wide walkway along side both edges of the launch ramp. The surface of the launch ramp would be concrete, with “V” grooves for easier and safer boat launching. Engineering details of the boat launch ramp are provided in Appendix D. See Section 3.5 for a description of construction activities related to the boat ramp upgrade. The renovation of the boat ramp would be accompanied by a new parking lot. The new parking area would include 32 boat (trailer) parking spaces and 36 auto parking spaces in one lot, and an additional 18 auto parking spaces in an adjacent lot. Furthermore, a new two-unit masonry block restroom/comfort station would be constructed near the upgraded boat launch area.

Day use facilities would include picnic and group facilities encompassing 36 single (family) picnic sites, three ADA accessible picnic areas, three four-table/24 person group sites and two 50 person group sites. Sites would include ADA compliant concrete pads, sheds, shelters, trash receptacles, barbecues, intermittent drinking fountains, and appropriate recreation improvements such as a tot lot, horseshoe pits, and lighting. Along with the above mentioned recreation facilities, there would also be two children play areas, and a disc golf course. The existing disc golf course would be maintained on the site, with six holes changing location. A new 9-hole disc golf course would be added to the south part of the Project site. All of the day use facilities on the Project site would be free of charge to the public.

### ***Parking Facilities***

The Project would include parking throughout the park to serve park employees, day use recreationalists, and bicycle path users. The Project includes seven parking areas with a total of 291 parking spaces, including three bus parking spaces, and 32 boat (trailer) parking spaces. Table 3-1 details the parking facilities associated with the Project, including each area's size and location. Figure 3-3 shows where the parking areas would be located.

**Table 3-1  
Proposed Parking Facilities**

<b>PARKING AREA</b>	<b>LOCATION</b>	<b>SPACES</b>
Parking Area A	Directly south of Montgomery Road entrance, north of Recreation and Natural History Center	51 Auto Spaces; 3 Bus Spaces
Parking Area B	Directly south of Ecology Nature Center, east of trail head	37 Auto Spaces
Parking Area C	West of Montgomery Road entrance, between entrance and traffic circle	38 Auto Spaces
Parking Area D	Directly east of the day use area, between the traffic circle and the boat launch	36 Auto Spaces; 32 Boat Spaces
Parking Area E	Adjacent to the boat launch at the south end of Parking Area D	18 Auto Spaces
Parking Area F	At the southern end of the Project site, just north of the Highway 162 Bridge	10 Auto Spaces
Parking Area G	On the eastern edge of the Project site, south of the Ecology Nature Center and east of New Turf Meadow	37 Auto Spaces; 29 Roadside Parallel Spaces

Source: Dangermond Group and Land Image 2002

### ***Expanded Utilities***

FRRPD proposes to extend public water and sanitary wastewater lines into the park from the foot of Montgomery Street for potable water and sanitation needs. Potable water would be obtained from the California Water Service Company (CWS) and distributed to buildings, restrooms, and day use facilities via 6-inch water distribution piping. The installation of several fire hydrants would also be required for fire protection. Hydrants would be designed to supply a minimum flow of 1,500 GPM and maintain 20 pounds per square-inch (psi) residual pressure. Wastewater effluent generated from buildings and restroom facilities would be collected and transported via a 6-inch gravity collection system to a wastewater lift station area. Several concrete manholes (48-inches in diameter) would be installed throughout the collection system. The lift station would pump effluent to a higher elevation where it would discharge into a 4-inch force main designed to convey wastewater effluent to the City's gravity collection system. Upon entering the City's collection system the wastewater effluent

would gravity flow to the Sewerage Commission Oroville Region (SCOR) wastewater treatment plant.

Restroom facilities would be designed with rounded walls and a reinforced footing to withstand a 100-year storm, and utilities within the Project area would be designed and constructed to meet all standards to prevent degradation of water quality during both construction and operation of the Project.

In addition to water and sewer lines, electricity would be extended to the site from a Pacific Gas and Electric line located on the edge of the Project site. Complete engineering details of the utilities and associated infrastructure are provided in Figures 4.3-1a – 4.3-1e, and Appendix D. See Section 3.5 for a full description of construction activities related to the extension of utilities into the park.

### **3.4.2 Grading and Drainage Concepts**

The Project site is relatively flat, with a change in elevation of 30 feet. Many of the landforms currently on the site consist of tailings piles, pits, and ditches left from previous rock quarry operations. Much of the grading on the site would involve re-contouring to create more natural looking landforms. Figures 3-5a through 3-5e, in Appendix D, present the grading and drainage concepts for the Project. Fill would be used predominantly to create building pads and parking areas. Some cut would be needed to contour existing slopes. A total of 10200 cubic yards of cut would be required, while 72300 cubic yards of fill would be imported. As noted in section 3.5 (Project Construction), standard dust abatement measures would be utilized to control dust caused by trucks and grading actions.

The conceptual design considers the locations of native trees and shrubs that should be preserved, especially Elderberries. It is anticipated that most of the existing native trees on the site would be preserved. In particular, efforts would be made to preserve and protect existing Oak trees, California Sycamores, and other native trees, with a trunk diameter greater than 2.5 inches when measured 3.5 feet above the existing grade. Elderberries (*Sambucus sp.*) would also be preserved. Grading or construction activities within 5 feet of the drip line of any of the above would be avoided. Prior to grading or construction, a temporary enclosure would be placed around this protection zone. Roads constructed on the Project site would be required to avoid native trees, in particular Elderberry bushes, which would have a 20 foot buffer around them.

Efforts would be made to avoid irrigating or conveying water into the drip line of any existing oak trees that meet the above size criteria (newly planted oak trees, on the other

hand, would accept even summer water), and altering the drainage around existing oak trees.

Parking lots and roads would be paved with an impermeable asphaltic concrete surface material. The surfaces of roads and parking lots would be relatively flat, and would utilize a “feathered” transition, reducing the need for curbs and gutters that can entrap trout during floods.

- All parking lots would be designed to convey storm water runoff into drainage inlets. Storm drain filters would be installed in each drainage inlet to remove soil, dirt, debris, and to minimize the discharge of common storm water effluents such as copper, lead and zinc. The filters would be inspected monthly and replaced each fall or as necessary. Once filtered, the storm water runoff would be discharged through outfalls and conveyed across landscaped areas to facilitate groundwater recharge. Excess runoff from landscaped areas would flow via swales into retention basins or drain rock leach trenches. Swales would be constructed with natural materials such as river boulders to create “dry creek beds.” Storm water runoff from the boat launch parking area would be collected in an outfall, filtered, and discharged in compliance with the CDFG requirements. Figure 4.3-2b depicts the drainage pattern of the boat launch parking area and the location of the drainage inlet and outfall.

An erosion control and storm water drainage plan (SWPPP) would be prepared in conjunction with the final Project design, and be approved by the Central Valley Regional Water Quality Control Board or the City, as appropriate, prior to Project implementation. In addition, the Oroville Storm Water Drainage Plan would be consulted to ensure that the Project design is in complete compliance, and the erosion control plan shall include measures to prevent soil, dirt, and debris from adversely affecting Project area drainage or from being transported to the Feather River. The storage and use of construction and fill materials would be minimized to eliminate the risk of potentially significant pollution in storm water runoff. Cut and fill activities within the 100 year flood plain as well as materials imported for fill purposes outside of the 100-year flood plain would be approved by the City’s civil engineer and landscape architect.

### **3.4.3 Landscaping, Irrigation and Revegetation**

The majority of the Project area would be restored, re-contoured and/or revegetated. Most of the Project area, especially the southern portion, was severely damaged by previous Lone Star Cement rock quarry operations. The damage includes litter and



debris, remnants of dumping, and evidence of indiscriminate vehicular activity. The area would be re-contoured, the roadway would be regraded, paved, and confined as part of the Project, and existing trees and significant native vegetation, such as Elderberry trees, would be preserved. The restoration and revegetation would utilize appropriate native species (see Appendix B for suggested native plants), and involve the addition of topsoil onto the site. An on-going vegetation maintenance program would be included as part of the Project to ensure the long-term health of this natural area.

The Landscaping and Revegetation Concept (Figure 3-5) depicts the relative size and location of areas or zones of different types of landscaping (or revegetation). The “Developed Area Landscaping” and the “Day Use Area Landscaping”, consisting of turf, native trees, and drought tolerant hydrozones planted with native plants and cultivators of native plants, represents the highest intensity of use. They would require installation of permanent irrigation systems, and on-going maintenance. The following is a rough estimate of the relative areas for “Developed Area Landscaping” and “Day Use Area Landscaping”:

- Approximately 12.7 acres to be fully developed and landscaped, requiring permanent irrigation.
- Approximately 6.9 acres to be revegetated with native trees and shrubs, requiring temporary (up to five years) supplemental irrigation.
- Approximately 12 acres with existing vegetation to remain native.

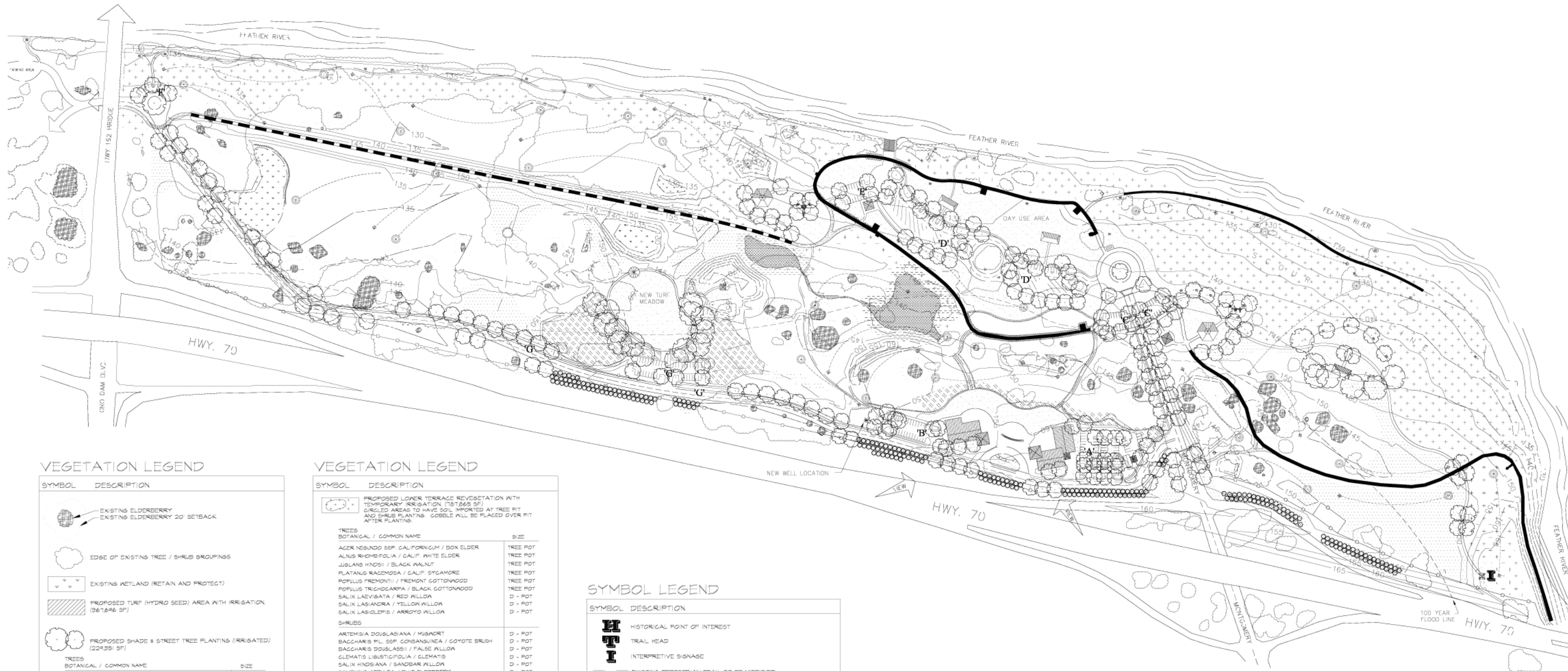
The “Combination Day Use Area” consisting of turf areas interspersed with large masses of native trees and shrubs represents the next level of intensity. This area would require frequent weeding and supplemental irrigation for approximately three to five years, after which the required inputs would be substantially less. The “Naturalized Zones” range from extensively to sparsely vegetated and are comprised of new vegetation, mostly in the form of “New Tree Masses”.

FRRPD proposes to drill two water supply wells on the Project site to supply water for irrigation activities. Each well would be drilled to a depth of 25 feet, and a truck-mount rotary drill would be employed for the operation. The total water demand considered necessary to supply the vegetated areas of Riverbend Park is 427 GPM/Day (gallons per minute per day (8 hours)), for up to the first five years. Irrigation requirements for the Project landscaping, as well as existing vegetation, would be broken up into permanent and temporary (up to five years) classifications. Permanent (automatic) irrigation would total 310 GPM/day, which includes rotor/spray for turf areas, spray for ornamental shrubs, and bubblers for parking lot as well as street trees. Temporary irrigation requirements would include automatic and manual systems. The automatic drip system

would supply 72 GPM/day to natives and revegetated areas and be available for up to five years (Paige Gimble, pers. comm.).

Prior to drilling and use of the proposed wells, a permit for drilling and operation of both wells would be obtained from the Butte County Department of Public Health, Division of Environmental Health, along with all other applicable state and federal permits. In addition, the county would be consulted to ensure that the proposed wells would not interfere with a key groundwater recharge area and that there is sufficient groundwater recharge at the project site such that the proposed wells would not significantly impact groundwater and recharge in the area (Greg Melton, pers. comm.). An additional groundwater study would be conducted, if required.



Along with the automatic irrigation system, a truck supplying 45 GPM/day would be utilized for up to five years to provide natives and revegetated areas with water, based on the evapotranspiration rates during the hottest period of the year (July = 0.27 inches/day). This evapotranspiration rate is possible between the months of April and October. For the remaining portion of the year, less water would be required for the Project site, yet the overall water demand of 427 GPM/day would need to be available for the first five years (Paige Gimbel, pers. comm.).



### VEGETATION LEGEND

SYMBOL	DESCRIPTION
	EXISTING ELDERBERRY
	EXISTING ELDERBERRY 20' SETBACK
	EDGE OF EXISTING TREE / SHRUB GROUPINGS
	EXISTING WETLAND (RETAIN AND PROTECT)
	PROPOSED TURF (HYDRO SEED) AREA WITH IRRIGATION. (267,696 SF)
	PROPOSED SHADE & STREET TREE PLANTINGS (IRRIGATED) (224,351 SF)
TREES	
BOTANICAL / COMMON NAME	SIZE
PLATANUS OCCIDENTALIS / YARWOOD SYCAMORE	15 GAL
PISTACHIA CHINENSIS / CHINESE PISTACHE	15 GAL
GELTIS OCCIDENTALIS / COMMON HACKBERRY	15 GAL
ZELKOVA SERRATA / SAWLEAF	15 GAL
PROPOSED VEGETATIVE SCREEN (23,890 SF)	
BOTANICAL / COMMON NAME	SIZE
QUERCUS LOBATA / VALLEY OAK	15 GAL
QUERCUS KILZENII / INTERIOR LIVE OAK	15 GAL
PNIS HALDENIS / ALPINE PINE	15 GAL
POPULUS FREMONTII / FREMONT COTTONWOOD	15 GAL
PROPOSED PLANTINGS AROUND EXISTING DETENTION POND WITH TEMPORARY IRRIGATION (56,660 SF)	
BOTANICAL / COMMON NAME	SIZE
CAREX NUDATA / TORRENT SEDGE	D - POT
CAREX BARBARAE / SANTA BARBARA SEDGE	D - POT
SCIRPUS ACUTUS / BULRUSH	D - POT
SCIRPUS BALTICUS / RUSH	D - POT
LERSIA ORYZOIDES / RICE CUTGRASS	D - POT
PROPOSED NATIVE GARDEN (104,362 SF)	
SELECT TREE, SHRUB, VINE AND GRASS SPECIES WILL BE DISPLAYED AND LABELED. PLANTS WILL BE FROM UPPER AND LOWER TERRACE LISTS. WE WILL SHOW VIA INTERPRETIVE SIGNAGE, INVASIVE NON-NATIVE SPECIES THAT HAVE BEEN REMOVED OR ARE BEING REMOVED FROM SITE.	

### VEGETATION LEGEND

SYMBOL	DESCRIPTION
	PROPOSED LOWER TERRACE REVEGETATION WITH TEMPORARY IRRIGATION. (187,865 SF) CIRCLED AREAS TO HAVE SOIL IMPORTED AT TREE PIT AND SHRUB PLANTING. COBBLE WILL BE PLACED OVER PIT AFTER PLANTING.
TREES	
BOTANICAL / COMMON NAME	SIZE
ACER NEGUNDO SPP. CALIFORNICUM / BOX ELDER	TREE POT
ALNUS RHOMBIFOLIA / CALIF. WHITE ELDER	TREE POT
JUGLANS HINDSII / BLACK WALNUT	TREE POT
PLATANUS RACEMOSA / CALIF. SYCAMORE	TREE POT
POPULUS FREMONTII / FREMONT COTTONWOOD	TREE POT
POPULUS TRICHOCARPA / BLACK COTTONWOOD	TREE POT
SALIX LAEVIGATA / RED WILLOW	D - POT
SALIX LASIOLEPS / YELLOW WILLOW	D - POT
SALIX LASIOLEPS / ARROYO WILLOW	D - POT
SHRUBS	
ARTEMISIA DOUGLASSIANA / MESAQUITE	D - POT
BACCHARIS PIL. SPP. GONGANSUNEA / COYOTE BRUSH	D - POT
BACCHARIS DOUGLASSII / FALSE WILLOW	D - POT
GLEHATIS LIGUSTICIFOLIA / GLEHATIS	D - POT
SALIX HINDSIANA / SANDBAR WILLOW	D - POT
SAMBUCUS GERULEA / BLUE ELDERBERRY	D - POT
ROSA CALIFORNICA / CALIF. WILD ROSE	D - POT
RUBUS VITIFOLIUS / WILD BLACKBERRY	D - POT
GRASSES	
MAHLENBERGIA RIGENS / DEER GRASS	D - POT
STIPA PULCHRA / PURPLE NEEDLE GRASS	D - POT
FESTUCA RUBRA / RED FESCUE	SEED
	PROPOSED UPPER TERRACE REVEGETATION WITH TEMPORARY IRRIGATION. (163,912 SF)
TREES	
BOTANICAL / COMMON NAME	SIZE
QUERCUS LOBATA / VALLEY OAK	TREE POT
ASCULUS CALIFORNICA / CALIF. BUCKEYE	TREE POT
JUGLANS HINDSII / BLACK WALNUT	TREE POT
PLATANUS RACEMOSA / CALIF. SYCAMORE	TREE POT
QUERCUS KILZENI / INTERIOR LIVE OAK	TREE POT
SHRUBS	
CERCIS OCCIDENTALIS / CALIF. REDBUD	D - POT
HETEROMELIS CALIFORNICA / WILD ROSE	D - POT
ROSA CALIFORNICA / WILD ROSE	D - POT
CALYCANTHUS OCCIDENTALIS / SPICE BRUSH	D - POT
RIHAMNUS CALIFORNICA / COFFEEBERRY	D - POT
SALVIA LEUCANTHA / PURPLE BASIL	D - POT
BACCHARIS PILULARIS / COYOTE BUSH	D - POT
VINES	
VITIS CALIFORNICA / CALIF. GRAPE	D - POT
ARISTOLOCHIA CALIFORNICA / BUTTMAN'S PIPEVINE	D - POT
GRASSES	
MAHLENBERGIA RIGENS / DEER GRASS	D - POT / SEED
STIPA PULCHRA / PURPLE NEEDLE GRASS	D - POT / SEED
FESTUCA RUBRA / RED FESCUE	SEED

### SYMBOL LEGEND

SYMBOL	DESCRIPTION
	HISTORICAL POINT OF INTEREST
	TRAIL HEAD
	INTERPRETIVE SIGNAGE
	EXISTING PEDESTRIAN TRAIL TO BE MODIFIED
	EXISTING RAIL ROAD GRAVEL TRAIL (MULTI-USE)
	EXISTING ASPHALT BIKE PATH
	EXISTING PARK ROAD (GRAVEL)
	EXISTING BENCH LOCATIONS ALONG EXISTING BIKE PATH
	EXISTING EXERCISE AREA
	PROPOSED PEDESTRIAN PATH / HIKING TRAILS
	PROPOSED MULTI USE GRAVEL PATH
	PROPOSED CONCRETE PEDESTRIAN PATH (ADA ACCESSIBLE)
	EXISTING CHAIN LINK FENCE
	EXISTING STEEL RAIL FENCE
	100 YEAR FLOOD PLAIN
	SINGLE PICNIC TABLE (36)
	ADA ACCESSIBLE PICNIC / FISHING AREA (15)
	24 PERSON SHADE STRUCTURE (4 TABLES / 1 BBQ) - (15)
	50 PERSON GROUP PICNIC AREA (9 TABLES / 2 BBQ) - (2)
	RESTROOM (2)
	DISC GOLF TEE
	DISC GOLF BASKET
	SPLIT RAIL CEDAR FENCING
EXISTING NORTH COURSE DISC GOLF HOLES 1 THROUGH 18 EXISTING HOLES 1, 8, 9, 13, 14 AND 17 RELOCATED NEW SOUTH COURSE (1-18)	

### NOTES

1. PLANTING IN STANDARD PARKING LOT AND DEVELOPED AREAS WILL USE TYPICAL SOIL PREPARATION CONCEPTS.
2. TREE PLANTING IN REVEGETATION AREAS WILL HAVE SOIL IMPORTED AT EACH TREE AND SHRUB LOCATION. COBBLE WILL BE PLACED BACK OVER PLANT PIT TO SECURE SOIL.
3. SEED WILL BE DISTRIBUTED TO AREAS THAT WILL RECEIVE IT AND HAVE HIGH PERCENTAGE TO GERMINATE.
4. TURF AREAS WILL BE HYDROSEEDING OR INSTALLED WITH SOD DEPENDING ON FINAL AVAILABILITY.
5. ALL PLANT MATERIAL WILL BE FERTILIZED WITH THE MOST UP TO DATE PLANTING TABLETS AT THE TIME OF INSTALLATION.

0 75' 150' 300'



## Riverbend Park Landscape & Revegetation Plan

EDAW

Figure 3-5

Back of Figure 3-5

### 3.5 PROJECT CONSTRUCTION

Construction activities would mainly consist of grading and contouring activities, landscaping, and the development of the various structures, shelters, trails, and parking lots. Construction equipment would include graders, box scrapers, water trucks, rollers, trenchers, back hoes, asphalt machines, transfer trucks, concrete trucks, post hole augers, pile drivers, water pumps, dump trucks for transporting cut/fill, and vehicles for transporting vegetation, landscaping equipment, and construction equipment.

As discussed above, grading and contouring activities would follow the erosion control plan and SWPPP prepared in conjunction with the Project design. Adherence to applicable plans would eliminate the potential for significant impacts to water quality, project area drainage, impedance or redirection of flood flows, and flows to the Feather River. In addition, construction sites would be laid out and maintained to prevent significant runoff of construction materials and to prevent a significant release of any construction-related chemicals, such as oil and gasoline, and to prevent transport of any unexpected spill to the Feather River. Silt fences would be used during construction to contain the loss of topsoil due to erosion (Alan Brown, pers. comm.).

Boat ramp construction activities would include minor grading, the installation of pilings, and concrete pouring operations. A backhoe would be employed to install sheet steel pilings approximately 18 feet beyond the river bank to create a barrier between the river and boat launch area. Water would be pumped from the boat launch area into a settling pond located above the river embankment. Pumping would be conducted throughout the construction process to remove water that may infiltrate through the streambed. The isolated boat launch area would then be excavated and filled with concrete. Non-hazardous weed abatement fabric would be utilized to deter weed growth. Pending the decision of the CDFG inspection warden, the steel piling barrier would be removed after the concrete cures (14 days). The total construction time in the river would be 18-30 days.

In order to eliminate the potential for significant impacts associated with construction in and near the Feather River, all boat ramp upgrade and renovation activities would be carried out in compliance with the CDFG Streambed Alteration Permitting guidelines. A 1401 Permit would be obtained if necessary, as would a streambed alteration agreement. Furthermore, best management practices and the CDFG regulations and guidelines would be followed throughout Project implementation.

Extension of the water and sanitary wastewater lines into the park would require trench excavation, filling, pipe installation, compacting, and surfacing, some of which would be conducted within the 100 year floodplain. Wastewater mains installed within the 100 year floodplain would be backfilled with two sack sand slurry to a depth of 3 to 4 feet to minimize the potential of wastewater discharge to the Feather River. The bulk of the wastewater lift station components would be installed underground in a sealed tank to reduce the potential of wastewater discharge in the event of a pipe break, and all of the sanitary wastewater infrastructure would be pressure-tested to ensure a water tight design. As previously discussed, a pump control panel equipped with a high water alarm indicator would also be installed to monitor the lift station operation, and maintenance staff would receive training on how to flush the lift station wet well in the event of a flood.

All construction activities, including grading, contouring, paving, and construction of proposed facilities, would follow Best Management Practices for air quality and noise abatement. Best Management Practices for air quality include the following measures to reduce vehicle- and equipment related emissions and particulate matter:

- Water all active work areas, access roads and paths, parking areas, and staging areas at least twice daily to control dust. Ensure that applied water does not enter the Feather River.
- Cover all trucks hauling demolition debris and other loose materials that could spill onto paved surfaces, or require all trucks to maintain adequate freeboard.
- All paved areas that are subject to vehicular and pedestrian traffic shall be kept clean of construction debris and soils. Sweeping of these areas will be implemented as necessary.
- Cover all stockpiles.
- Limit traffic speeds on unpaved roads and paths to 5 miles per hour.
- Revegetate disturbed areas, if appropriate, upon completion of the Project.

Best Management Practices for noise abatement would include the following measures:

- Conduct construction activities during daytime hours (exceptions to this timeframe would be subject to prior approval), use of the best available noise control techniques wherever feasible, use hydraulically or electrically powered impact tools when feasible, and locate stationary noise sources as far from sensitive uses as possible.

- If deemed necessary, construction work on weekends or holidays may be authorized. To the extent possible, conduct all on-site noisy construction work above 76 dba (such as the operation of heavy equipment) between the hours of 8:00 a.m. and 5:00 p.m. to minimize disruption to nearby sensitive receptors.
- Equip construction with mufflers kept in proper operating conditions, and when possible, shut off equipment rather than idling. Equip trucks and other construction equipment with standard muffling devices.

### 3.6 TIMING AND PHASING

The Project would be developed in eight phases (see Figure 3-6). Table 3-2 below describes what would be developed in each phase, how many workers would be involved, and the timeframe for completion.

**Table 3-2  
Project Development Phases**

PHASE	DEVELOPMENT	NUMBER OF WORKERS	TIMEFRAME
I	Montgomery Street extension, Parking Lots C and F, Park Road to South, and Elderberry Tree Protection Fencing	15	3 months
II	Boat Launch and associated Day Use Area, Parking Lots D and E.	8	4 months
III	Chamber of Commerce Building, Parking Lot A	4	2.5 months
IV	Trail Enhancements, Accessible Fishing Areas, and Day Use Area	10	6.5 months
V	Remodel the existing disc golf course, and addition of the 9-hole course	5	1 months
VI	Recreation, Natural History, and Concession Building, Parking Lot A	40	12 months
VII	New Turf Meadow, Overlook, Roundhouse, Council Ring, and Parking Lot G	12	3 months
VIII	Ecology Center, and Parking Lot B	40	8 months

Source: Land Image, 2003.

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Back of Figure 3-6

## 4.0 ENVIRONMENTAL EVALUATION

### 4.1 LAND USE AND PLANNING

#### 4.1.1 Environmental Setting

##### *Recreational History*

The recreational history dates back to at least 1974 when the Project site was included in the planning initiative known as the Feather River Enhancement Project. The enhancement project was planned to improve the river corridor after construction of the Oroville Dam. Because installation of the dam had left debris and low water levels, it was believed that a plan for recreational uses would serve to mitigate some of the negative impacts. The Feather River Enhancement Project included the Riverbend Park Project site, also known at that time as “West Park,” as well as other properties along and near the Feather River.

In May 1977 the Final Environmental Impact Report for the Feather River Enhancement Project was completed, but funding for construction of the recreational improvements outlined in the report could not be realized and the improvements were therefore not implemented. In subsequent years, FRRPD installed a series of recreational enhancements at the Project site, such as picnic tables, a boat launch area, fitness stations, and a disc golf course. FRRPD currently manages the Project site as a park.

##### *Existing Land Use*

The Project site includes 62 acres under the ownership of the CDFG and 58 acres under the ownership of the FRRPD. The CDFG lands are currently leased to FRRPD, giving them control of the 120 acre site. The northern 58 acres are in Oroville’s city-limits, while the southern 62 acres are in Butte County, but within Oroville’s Sphere of Influence (Figure 4.1-1). Oroville has targeted the southern portion of the Project site for annexation for the purpose of better coordinating development and governmental decisions.

The Project site is accessed from Montgomery Street, which terminates at a gravel parking area. The primary recreational uses on the site are disc golf, boat launching, and picnicking. Fitness stations are provided for individual or small group use and a bike trail travels throughout the site, predominantly along the riverfront. A vehicular service road runs parallel to Highway 70 passing under the Highway 162 Bridge at the south

end of the Project site to access the Oroville Wildlife Fishing Ponds property south of the bridge.

Irregular piles of earth and various forms of open, bare sandy areas, interspersed with scattered clumps of grassy, shrubby and mature vegetation make up the northern portion of the Project site. The southern area is predominantly vegetated with a narrow trail running through it (Figure 4.1-2). Large piles of fill are scattered in various locations across the property. Figure 4.1-3 shows an aerial view of the Project site.



**Figure 4.1-2 Southern Project Area**

#### ***Surrounding Land Use and Zoning***

The Project site is surrounded by residential uses to the west and north, with recreation uses located south of the Project site. East of the Project site across Highway 70 are commercial land uses. Numerous single-family residences are located immediately west across the river from the Project site along the top of the bank. These residences exist at a much higher elevation than the Project site. This area is currently zoned Suburban Residential (SR) requiring one unit per 10,000 square feet of lot area. Residential uses north of the Project site are zoned Single Family Residential (R1). The Oroville Wildlife Fishing Ponds Park is located immediately south of the site complete with comfort stations, parking, and a pond area with a fishing pier. This southern property, as well as the Riverbend Park site, is designated (O) for Open Space on the City Zoning Map.





0 150' 300' 600'



Scale: 1 : 3,600  
1" = 300 feet

— Project Boundary

Riverbend Park  
Existing Land Use

EDAW **Figure 4.1-1**



Figure 4.1-1 (back)





Sources: Aerial Image: DWR 11/01/01 / CAD Base: BBA Engineering 2002

0 150 300 600 900 Feet

Scale 1 : 3,600  
1" = 300 feet



EDAW

5/27/03

## Riverbend Park Aerial of Project Site

Figure 4.1-3



Back of Figure 4.1-3



To the east of the site, across Highway 70, are typical highway commercial uses including gas filling stations, motels, and large-scale retail shopping centers. The area is zoned for Heavy Commercial. Farther east along Montgomery Street is the Oroville Central Business District, which encompasses the Oroville Historic District that contains a mixture of single and multi-family residential, as well as professional, public and restricted commercial land uses.

## 4.1.2 Regulatory Considerations

### *City of Oroville General Plan*

The Oroville General Plan land use map designates the Project site as “Parks.” There are generally three related general plan categories for parks: Environmental Conservation/Safety, State Water Project Lands, Water and Resource Management. The Plan states that the “Parks” designation is for “public parks, golf courses or other appropriate recreational uses. A recreational vehicle or campground may be permitted within areas designated as Parks as a conditional use if deemed appropriate with surrounding uses and densities.”

The Oroville Redevelopment Agency (RDA) includes nearly all of the City of Oroville and is, in effect the City’s public works funding agency responsible for a broad range of improvement projects.

The General Plan and its Draft Environmental Impact Report set forth a variety of objectives and implementing policies from the General Plan as mitigation with respect to land use. Of these, the following are most relevant to the Riverbend Park site:

#### Objectives: Residential Areas

The Riverbend Park site is adjacent to residential lands on the west and north, therefore, these objectives should be considered in the development of the site.

- 3.30b** Encourage preservation of native woodland in areas to be developed by providing guidelines and encouraging the wide-spread planting of oaks and other tree groups on and off the project site under consideration.
- 3.30d** Preserve the scale and character of existing neighborhoods by encouraging opportunities to enhance and promote neighborhood identity and neighborhood improvement projects.

- 3.30f** Minimize earth grading by encouraging the use of imaginative engineering and techniques (such as contour grading) in project grading plans.

Implementing Policies: Residential Areas

- 3.30g** Require or encourage the transfer of density to preserve orchards, woodlands, and wetlands by clustering development in locations where the land supports fewer resources and the infrastructure is in or is close to the project site.
- 3.30k** Develop and adopt grading guidelines that promote the utilization of a slope analysis of existing topography as a part of preliminary project planning. The grading guidelines shall include, among others, the following concepts:
- Where development is proposed on slopes between 15 and 30%—design structures to accommodate the topography and minimize grading. Discourage the creation of pads suitable for level-site structure designs.
  - Where development is proposed on slopes over 30%—discourages the construction of structures unless no other opportunities exist for construction of a single residence on an existing legal parcel.

Objectives: Visitor Services

- 3.43a** Encourage the concentration of visitor accommodations on Feather River Boulevard from Bed Rock Park south and on sites overlooking and relating to the Feather River.
- 3.43c** Provide linkages with visitor and traveler services through the use of Highway 70 landscaping that is keyed to the visitor service area identity.

Implementing Policies: Visitor Services

- 3.43g** Encourage the FRRPD in their efforts to develop the Riverbend Park area.

Objectives: Parks Recreation and Open Space

- 7.10a** Strive to create a high quality, diversified public park system that provides adequate and varied recreational opportunities conveniently accessible to all present and future residents, and that enhances Oroville's unique attributes.

- 7.10b** Cooperate with the Feather River Recreation and Park District, State Department of Parks and Recreation, local school districts, and private purveyors in establishing and maintaining park and recreation facilities within and adjacent to the Planning Area.
- 7.10c** Increase new park use and identify the presence of the “urban forest” by selecting highly visible locations for new parks in population service center areas.
- 7.10d** Where human presence will not negatively impact sensitive species, strive to locate neighborhood and community parks adjacent to or surrounding riparian corridors, to take advantage of the scenic value of the riparian corridor, to ensure its preservation, to strengthen the connection between riparian corridors and parkland throughout the Planning Area, and to increase the presence of nature in the Planning Area.
- 7.10e** Maximize visual and physical access to waterways and to open water, where such access will not conflict with preservation of habitat values.

*Implementing Policies: Visitor Services*

- 7.10f** In coordination with the Feather River Recreation and Park District, and the other effected and participating agencies, prepare and adopt a Parks, Recreation, Open Space, and Trails Master Plan, including but not limited to the elements identified in the General Plan.
- 7.10g** Coordinate park and trails development and operation with the Feather River Recreation and Park District and other participating entities and agencies.
- 7.10I** Work with the FRRPD to continue joint planning for future development of the Feather River Parkway and bicycle plan.

***Butte County General Plan***

The Riverbend Park site is split between the incorporated City of Oroville and Butte County. The southern portion of the site is within Butte County jurisdiction, and therefore subject to County regulations. The Butte County General Plan Land Use Element designates the southern 62 acres of the subject site as “Public” and the northern 58 acres, in the City of Oroville, as “Grazing and Open Lands.” Lands designated as “Public” have as their primary uses large facilities owned and operated by government agencies, including schools, colleges, airports, dams, reservoirs, disposal

sites, recreation facilities, conservation areas, fire stations and other government buildings and property. There are no standards for the intensity of use except where necessary to protect adjacent uses and public welfare.

Lands designated as “Grazing and Open Land” have as their primary uses livestock grazing, animal husbandry, intense animal uses and animal matter processing. Secondary uses include resource extraction and processing, forestry, plant crops, agricultural support services, outdoor recreation facilities, airports, dwellings, utilities, environmental preservation activities, public and quasi-public uses and home occupations.

#### ***Feather River Recreation & Park District Master Development Plan***

The 1993 FRRPD Master Development Plan highlights proposed facilities for the site including enhancement of the natural/riparian areas of the site; open space and landscaped areas; picnic areas; bicycle staging area; walking, jogging and bicycle paths; museum, nature and recreation center; restrooms and parking areas; main entrance kiosk; and a special use area consisting of one or two restaurants and some small shops that would support the leisure and recreational opportunities.

#### ***Habitat Conservation Plans or Natural Community Conservation Plans***

There is not currently a Habitat Conservation Plan or a Natural Community Conservation Plan that is applicable to the Project site.

### **4.1.3 Project Consistency with Applicable Regulations**

As described above, the Project site is currently under the jurisdiction of both the FRRPD and Butte County. The northern 58 acres of the site are located in the City of Oroville yet are under FRRPD regulations, while the remaining 62, acres making up the southern portion of the site, are in Butte County, yet still in the City of Oroville’s sphere of influence. The City of Oroville has targeted the southern portion of the Project site for annexation in order to better coordinate development and governmental decisions.

#### **City of Oroville**

The City of Oroville designates the northern portion of the Project site as “Parks”, which is consistent with existing and planned uses of the project site. The City zoned the Project site, as well as the neighboring Oroville Wildlife Fishing Ponds Park to the south of Highway 162 as “Open Space,” which permits recreation facilities. No conditional use permits would be required, to develop the site as the only applicable regulations include those of the FRRPD. The FRRPD is not required to comply with

the regulations of the City of Oroville (as they are an independent governmental agency), yet it intends to design Riverbend Park to be compatible with City guidelines for good relationship sake.

#### Butte County

Butte County designated the southern 62 acre portion of the Project site as “Public”. A permitted use under this land use designation includes recreational facilities. The Project site is currently being used for recreational purposes. Project implementation would mainly involve improving and adding to the existing recreational opportunities available, which would not require any special permits from the County. The Project fully complies with all County regulations applicable for the land use designation of “Public.”

#### FRRPD – Master Development Plan

The FRRPD is the lead agency for development of Riverbend Park. The Project is designed to fully comply with what the 1993 Master Development Plan (MDP) had planned for this site. The two restaurants and small shops are the only portions of the 1993 MDP noted for Riverbend Park that would not be included in the Project.

### **4.1.4 Thresholds of Significance**

The Project would have an impact with respect to land use and planning if it would:

- Physically divide an established community.
- Be incompatible with existing land use in the vicinity.

The Project would have a significant impact with respect to parks and recreational activities if it would:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

### 4.1.5 Impacts and Mitigation Measures

#### *Less than Significant Impacts*

##### 1. Division of an Established Community

The Project would further develop an existing recreation site. It would not expand onto surrounding parcels. The Project site is separated from the surrounding community by the Feather River to the west and north, Highway 70 to the east, and Highway 162 to the south. The recently developed Oroville Wildlife Fishing Ponds Park to the south is the only parcel that directly borders the site. Because of the separation of the site from the community no division of an established community would result from development of the Project. The impact would be *less than significant*.

No mitigation is required.

##### 2. Compatibility with Surrounding Land Uses

Oroville, Butte County and the FRRPD have designated the Project site as a park facility. The Project would be compatible with surrounding recreational land uses including the Oroville Wildlife Fishing Ponds Park to the south. The Project would connect with the Oroville Wildlife Fishing Ponds Park via an access road along the eastern edge of the site.

The Project involves new development of an existing community park, and therefore results in no land use change or land use conflict. Located on the bluffs across the Feather River, a few residences would have an altered view of Riverbend Park after development, yet the view would still be of a community park, and therefore be consistent with the existing land uses. The Project would be compatible with businesses and residents located to the east of the Project site due to Highway 70 acting as a buffer to the upgraded park. A *less than significant* impact would result from the additional development of the Project.

No mitigation is required.

##### 3. Recreation Facilities

It is expected that the recreation usage at Riverbend Park would increase after development of the Project. The convenience of accessing Riverbend Park from Highway 70, the unique recreation opportunities provided at the park including disc golf, exercise stations and the boat launch, and free admission to the park are all reasons that Riverbend Park would attract region-wide recreationalists. The increase in the recreation use at the site could lead to erosion and physical degradation, yet project design features noted in the Hydrology and Water Quality section would be designed to

control erosion and limit the physical deterioration that could occur. New development on the Project site would be designed to reduce and restrict the impact of additional visitors to specific areas. Nearby recreation sites may experience a decrease in usage numbers due to their visitors selecting the newly developed Riverbend Park, and therefore less physical degradation would occur at these sites. A ***less than significant*** physical deterioration impact to recreation facilities would result from the Project. No mitigation is required.

## 4.2 AESTHETICS

### 4.2.1 Environmental Setting

#### *Regional Features*

Butte County is predominantly rural, exhibiting an agricultural character throughout most of the western portion of the County and a foothill/mountain natural environment character in the eastern portion of the County. The western half of the County is dominated or largely influenced by human development, but provides extensive scenic views of the foothills and mountains toward the east. The eastern half of the County has a predominantly natural setting with dispersed human activities and modification throughout the lower and middle elevations and logging activities in portions of the middle and higher elevations. The road network throughout the area includes the state freeway routes, the extensive County road system, logging roads and numerous private residential access roads. Most roads have required some degree of topographic or vegetation alteration thereby influencing the visual quality of the County. (Butte County, 2000)

In many cases, the areas along the valley's rivers and streams are lined by riparian forests of tall trees and thick shrubs. The Project location is a common feature of the valley landscape as large, gravel-like piles of tailings along the Feather River were created by the dredge mining that took place along the Feather River in the late 19th and early 20th centuries. The piles of tailings create areas of lumpy appearing low hills, like those found in the Oroville Wildlife Area.

#### *Views of the Project Site*

##### *From the North*

The Project site comes into view just beyond the Highway 70 Bridge traveling south across the Feather River. When crossing the Feather River, the northernmost portion of the site is visible, while the rest of the site is blocked from view by intervening trees and sloping topography. The quality of the viewpoints from the north of the Project site is not high, as vehicles typically travel at speeds over 65 miles per hour on Highway 70. The duration of time that the Project site is in clear view from the north is extremely limited due to the highway bending northeast just north of the Project site. As one drives further south on Highway 70, the Project site comes into much clearer view when looking west (see the description of views from the east, below).



There are residences located on the northern bank of the Feather River that have a view of the Project site. There is extensive vegetation, specifically tree groupings along the northern bank of the Feather River that partially screen views from these residences. Figure 4.2-1 illustrates the northern portion of the site as seen from the west bank of the Feather River. The main view of the Project site from these residences consists of a flat barren open space sloping up to the south, with few small trees, and noticeable gravel mounds interspersed.

The Project site, as viewed from the north, has visible gravel ground cover and random piles that make the topography appear somewhat unnatural. The vegetation that is visible on the Project site includes; chaparral, low lying bush, along with trees interspersed on the northern portion of the site, yet concentrated along the western bank of the river's edge. When crossing the Highway 70 Bridge, the Feather River is a prominent visual feature to the west. The Feather River becomes less visible when it heads south, and the sloping elevation of the Project site blocks the view of those on Highway 70.



**Figure 4.2-1 View to Northern Portion of the Project Site**

*From the South*

The Project site is visible from the south, from highway 162, specifically from the Highway 162 “Roger Jennings Bridge” over the Feather River. The Roger Jennings Bridge spans the Feather River from the top of the bridge a person has views of both the Feather River itself, as well as the Project site. Views of the site from this location are limited since the southern end of the Project area is the most densely vegetated section. When looking north to the Project site from Highway 162, the Feather River is

in view for a considerable distance. The gravel mounds are not as noticeable from the south since the dense vegetation screens the rolling topography. The only man-made features that are visible from the south of the Project site are the graded bike and pedestrian trails, and the vehicular access road, paralleled with metal fencing. Figure 4.2-2 provides a view of the southern portion of the Project site looking north from the Highway 162 Bridge. The bike/pedestrian trail extends along the western portion of the Project site, whereas the vehicular access road is situated on the eastern border. The bike and pedestrian trail along with the access road is not visible for a significant distance.

The view of the Project site from the south, specifically from Highway 162, has a much higher visual quality than the views from the north, as there are larger amounts of vertical elements as well as visible contrast.

Along with views from Highway 162, those traveling north on Highway 70 have a view of the Project site. Those traveling north on Highway 70 have a brief view of the southern section of the Project site, before they are directly to the east of it. The main features that are visible when traveling north on Highway 70 include: the dense vegetative cover, the Feather River to the West, a brief view of the dirt access road and bike/pedestrian trail on the southern end of the Project site.



**Figure 4.2-2 View from Highway 162 Bridge**

*From the West*

The views of the Project site from the west are from private residential properties that are inaccessible to the public. The western bank of the Feather River is significantly higher than the eastern bank; thus the views of the Project site are from an elevated position looking down. Figure 4.2-3 is a view from the west bank of the River looking easterly to the Project site towards the existing parking area. Since the site slopes up from west to east, views from the western bank generally sweep across the entire site with the exception of a few areas where trees obscure these views. Located in the foreground of the Project site is the Feather River, which appears in clear view of the residences, located along the western bluff. Flat open lands, gravel piles, dense vegetation, as well as rolling hills are all visible from the residences to the west. There is significant contrast present ranging from the Feather River in the foreground, to the flat open land throughout the site, with patches of thick vegetative cover mainly to the south.

There are no recreation or public areas directly to the west of the Project site where residences currently have a view of Riverbend Park. (City of Oroville, 1995) The view from the residences to the west encompasses the majority of the man-made developments on the Project site. All trails and roadways are visible with the exception of the road along the eastern border of the Project site due to existing landscape screening (especially the southern portion of the Project site), as well as topographical change.



**Figure 4.2-3 View of Project Site from the West Bank**

*From the East*

The majority of the 120-acre Project site is visible from Highway 70, which extends the entire length of Riverbend Park to the east. In some areas only the eastern portion of the Project site is visible because of gravel mounds or trees that block views across the site. However, for the majority of the length of the site, views from Highway 70 are all encompassing, and the trails, vegetation, main parking lot and even the river are visible from the east (Figure 4.2-4). Because Highway 70 is an elevated freeway, it blocks views from farther east, such as from the commercial/retail uses in the City of Oroville, towards the Project site. The view from Highway 70 has a rather short duration, due to typical speeds at or above 65 miles per hour.



**Figure 4.2-4 Main Entrance and Parking Lot**

*Project Site Visual Character*

The Project site has been substantially disturbed by previous dumping and construction activities. (City of Oroville, 1995) Gravel mounds interspersed with vegetation dominate the existing visual character of the Project site (Figure 4.2-5).





**Figure 4.2-5 View Looking Northeast across Project Site**

Man-made features include an 18-hole throwing disc-golf course located on the Project site. There are staging areas where individuals throw the disc, as well as small, approximately 3-foot high, man-made “holes” that are the targets (Figure 4.2-6). These disc golf holes do not represent a significant visual feature. Fitness stations are also provided for individual or small group use (Figure 4.2-7).



**Figure 4.2-6 Disc-Golf Course Hole**



**Figure 4.2-7 Fitness Station**

Other man-made features include the bike and pedestrian trail system (Figure 4.2-8), dirt access roads, sitting benches, a boat ramp (Figure 4.2-9), gravel parking area, and limited amounts of fencing.



**Figure 4.2-8 Bike and Pedestrian Trail**



**Figure 4.2-9 Boat Launch Ramp**

*Views from the Site*

The Feather River borders the Project site to the west. The views to the west are primarily of the Feather River and the stands of vegetation lining its banks. On the far bank of the Feather River to the west and northwest are private homes located on the bluff (Figure 4.2-10). Farther southwest of Riverbend Park is the Oroville Wildlife Area and valley agricultural lands.



**Figure 4.2-10 Residences across Feather River**



East of the Project site, Highway 70 appears in the foreground, with the Sierra Nevada Hills in the background. Beyond the highway is a strip of commercial and retail development including numerous hotels and retail buildings (Figure 4.2-11), which looks like typical highway commercial development attracting the attention of travelers along Highway 70.



**Figure 4.2-11 View Looking Across Highway 70**

Portions of Oroville are not noticeable from the Project site, due to the higher elevation of Highway 70. The only nearby residences or commercial/retail buildings clearly visible from the Project site are those located directly east of the main entrance road. These residences and buildings would be in view when looking under the Highway 70 overpass.

Directly to the south of the Project site is the Highway 162 Robert Jennings Bridge. This bridge currently has two lanes, yet plans are approved to widen it to its designed width of four lanes. (Jo Sherman, pers. comm.) Southeast of the Project site, beyond the bridge, the eastern bank of the Feather River has been marred by commercial gravel operations through clearing of vegetation and the creation of material stockpiles. Also visible to the southeast is the newly constructed park. There is a permanent restroom facility along with a parking area to support the recreation opportunities at the man-made lake. The western bank along this stretch of the Feather River has been substantially enhanced by converting stockpiles of dredge tailings into the Oroville Wildlife Area.



To the north of the Project site the Feather River bends east to form the northern boundary. Highway 70 extends north of the Project site, then heads east across the Feather River. The Sierra Nevada foothills appear in the background view from Riverbend Park looking north.



**Figure 4.2-12 Northern Boundary of Project Site (looking east)**

#### **4.2.2 Regulatory Considerations**

The two main documents that need to be addressed to ensure aesthetic compliance for the Project include the City of Oroville General Plan and the Butte County General Plan. Each General Plan provides a description of objectives, and policies for projects to abide to. The applicable sections of each General Plan are described below.

##### ***City of Oroville General Plan***

###### ***City Design Objectives***

The General Plan and its Draft Environmental Impact Report set forth a variety of objectives and implementing policies as mitigation with respect to visual resources. Of these, the following are most relevant to the Riverbend Park site:

- 4a.** Require quality design and materials for all projects.
- 4c.** Strive to keep Oroville as seen from the freeway a city to be visited, enjoyed and admired.
- 4i.** Strive to locate parks facilities at locations that have been identified as potential park sites by the FRRPD.

- 4p. Highway 70 shall be developed as a landscape corridor through the Oroville Community.

Implementing Policies

- 4y. Encourage the efforts of the FRRPD in the North Forebay, Nelson Ballpark expansion and the development of the Riverbend Park.
- 4z.1. In order to create a continuous and unified landscape corridor along Highway 70, encourage private participation in the installation of screen type landscaping on private properties adjacent to the Highway which are not included within the State Highway 70 Landscaping Project.

***Butte County General Plan***

Land Use Element

The Riverbend Park site is split between the incorporated City of Oroville and Butte County. The southern 62 acre portion of the site within Butte County is subject to County regulations.

*6.4 Scenic Areas*

The open character of the County and its variety of terrain and elevation provide many beautiful vistas and panoramas from rural highways. These picturesque natural landscapes are not only of value to existing residents but are also an attraction to tourists and new residents. Maintaining the benefits of scenic highways requires controls on development in scenic corridors and continual consideration of the view from the road.

*Policy 6.4.c.* Encourage compatible land use patterns in scenic corridors and adjacent to scenic waterways, rivers and creeks.

### **4.2.3 Project Consistency with Applicable Regulations**

***City of Oroville***

The Project would be developed in accordance with the visual resource policies contained in the City of Oroville General Plan. The General Plan provides policies and guidelines for quality of design, view from the freeway, park facilities, and the development of Highway 70 as a landscape corridor.

Quality of Design

The FRRPD would use the highest quality materials in all Project construction efforts. The careful design and layout of the Project features ensures that high quality views would be retained.

#### *View from the Freeway*

The development of Riverbend Park would improve the image of the City of Oroville, as this park would become a visual attraction for motorists traveling along both Highway 70 and Highway 162. Due to the scale of the Project, views from the freeway would make visually dominant elements of the park more noticeable, yet the development would occur according to site plans approved by the local jurisdictions.

#### *Park Facilities*

The Riverbend Park site has been selected by the FRRPD to be developed. This site is currently a park, yet it is extremely underdeveloped. With the approval of this Project, Riverbend Park would become a much more attractive recreation facility to be used by the entire region.

#### *Landscape corridor along Highway 70*

A landscape plan would illustrate how landscaping would be developed at the Project site, and would provide a snapshot of what future views would look like. The landscaping along Highway 70 would be designed to retain the highest quality view, while at the same time screening the more visually dominant Project features such as the two new buildings.

### ***Butte County***

#### *Scenic Corridors*

The Riverbend Park Project site is not located alongside, or in view of, a designated scenic highway. However, the Project would be designed with high quality standards. Project approval would extend the riverbed development that has occurred at the park site directly to the south of Riverbend. Completion of the Project would create a visually appealing Park corridor between Highway 70 and the Feather River.

## **4.2.4 Thresholds of Significance**

The Project would have a significant impact with respect to aesthetics if it would:

- Have a substantial adverse effect on a scenic vista.
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
- Substantially degrade the existing visual character or quality of the site and its surroundings.

- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

#### 4.2.5 Impacts and Mitigation Measures

Visual resources are the natural and cultural features of the landscape that can be seen and that contribute to the public's appreciative enjoyment of their experience of the environment. Visual resource or aesthetic impacts are generally defined in terms of a Project's physical characteristics and potential visibility and the extent to which the Project's presence would change the perceived visual character and quality of the environment in which it would be located.

##### ***Significant Impacts***

###### ***1. Light and Glare***

There are currently only 3 lights on the Project site, all of which are located at the entrance. The addition of 40 new 14-foot to 18-foot tall lighting structures placed throughout the site, 3 safety up-lights for the two new buildings, and 9 interior lights for the group picnic areas would create a noticeable change to existing nighttime conditions due to the remoteness of the project site. The new lighting on the Project site would be clearly visible to nearby residents on the bluff to the west as well as those traveling along Highway 70, to the east. The introduction of additional lighting and new facilities onto the Project site would change the visual relationship of the site to the surrounding landscape and would therefore represent a ***significant impact*** without any mitigation measures. Lighting would be designed in a manner that would not adversely affect sensitive biological receptors yet at the same time provide security.

##### **Mitigation**

1. Utilize directional or shielded lighting where possible, and only areas required for security would be constantly lit during night hours. Install switches on all nighttime lighting fixtures that are not constantly needed for security purposes. Build all new structures with non-reflective paints, so as to avoid any unnecessary nighttime glare. Design structures in a manner where they do not have the possibility to cause reflection or glare into the traffic on the surrounding Highways (no mirror windows).
2. Light only the 10 necessary security lights during nighttime hours. All other lights would have timers, or manual on-off switches.

3. Use “spot-lighting” only when directed at the base portion (below 5 feet in height) of new buildings.
4. Locate new buildings on the Project site in a manner that makes them most visually appealing to drivers on Highway 70, with non-reflective surfaces to avoid shine onto the highway.

### ***Less than Significant Impacts***

#### ***1. Degradation of existing visual character or quality of the site and surroundings***

The Project site was historically used as a dumping site, where large piles of gravel and debris were stored. The recreation enhancements and additions, along with the restoration and protection of vegetation, would help to improve the visual character and quality of the Project site. The Project would change the visual character of the site by adding buildings, parking lots, recreation opportunities, picnic areas, native vegetation, and non-native turf areas throughout. Much of the new vegetation on the Project site would be used for screening purposes. The addition of vegetation and recreation based infrastructure would make the Project site more closely resemble the neighboring Oroville Wildlife Ponds Park to the south. The Project is designed to distinguish Riverbend Park as a community park instead of open space.

The main viewing areas of the Project site come from the surrounding elevated areas which include the residences to the west, Highway 70 to the northeast and Highway 162 to the south. The Project’s new infrastructure (see Chapter 3) would appear more dominant in the landscape, mainly because of the two new buildings and parking areas (291 spaces total). Much of the recreation based development would be screened by existing and new vegetation, as well as by the developments along the eastern portion of the Project site.

The Project would not create a significant amount of blockage because the majority of views would come from elevated locations. Viewers who could experience blockage include those traveling on Highway 70, directly to the east of the center portion of the Project site. These travelers to the east would have a short duration view that is out of the normal cone of view, and therefore would not be significantly impacted.

The Project would not contrast with the surrounding area, as it would maintain the overall appearance of a riverbed park. The vegetation and development of the Oroville Wildlife Fishing Ponds is very similar in character to the Project. There are no parks or open space areas to the north, east or west of the Project site.

The visual impact on the character and quality of the site or the surroundings due to the Project would ***less than significant*** due to the above mentioned reasons.

No mitigation is required.

### ***No Impact***

#### ***1. Scenic Vista***

None of the views in the Project area are classified as scenic vistas by either the Oroville General Plan or the Butte County General Plan. The only roadway eligible for State Scenic Highway status in Butte County is Highway 70 north of Highway 149. No other lands near the Project site are considered to be a designated scenic vista. Therefore, the implementation of the Project would result in ***no impact*** on known scenic vistas.

No mitigation is required.

#### ***2. Scenic Resources (trees, rock outcroppings, and historic buildings) within a state scenic highway***

The Project site is not located within the viewshed of a designated State Scenic Highway. The only roadway eligible for State Scenic Highway status in Butte County is Highway 70 north of Highway 149. The Project site is not visible from this scenic section of Highway 70. There are numerous trees and gravel piles on the Project site, however they do not warrant special scenic attention. It is anticipated that mature trees may need to be removed during construction of the Project. The Project, however, would result in an increase in the amount of native tree vegetation on the Project site. The amount of non-native vegetation on the site would remain approximately the same, with the removal of wild grassland and addition of new turf areas. A concrete railroad crossing trestle built in the 1960s is located on the western side of the Project site, as well as on the opposite side of the Feather River. The trestle is not classified as a historic building. There are no historic buildings on the Project site. The Project would result in ***no impact*** to the aesthetic conditions within view of a designated State Scenic Highway.

No mitigation is required.

## 4.3 PUBLIC UTILITIES AND SERVICES

### 4.3.1 Environmental Setting

This section presents an overview of the utility systems and public services at Riverbend Park, including water distribution, sanitary wastewater, solid waste management, storm water drainage, police protection, and fire protection services. Table 4.3-1 lists the utility and public service providers at Riverbend Park.

**Table 4.3-1  
Utility and Public Service Providers for Riverbend Park**

UTILITY SYSTEM/ PUBLIC SERVICE	SERVICE PROVIDER
Water Distribution	California Water Service Company (CWS)
Sanitary Wastewater	City of Oroville Department of Public Works, Sewerage Commission Oroville Region (SCOR)
Solid Waste	Norcal Waste Systems, Butte County Department of Public Works
Storm Water Drainage	City of Oroville Department of Public Works, and Butte County Department of Public Works
Police Protection	Oroville Police Department
Fire Protection	Oroville Fire Department

\*Source: EDAW, 2003

#### ***Potable Water Supply***

The Project site is served by the California Water Service Company (CWS), a private utility company that services much of Oroville south of the Feather River and South Oroville. CWS currently has 4,500 connections serving approximately 10,000 persons primarily within the City limits of Oroville. CWS derives 85 percent of its water from the west branch of the Feather River, 10 percent from the State Water Project canal, and 5 percent from wells. A California Water Service Company water main exists along Montgomery Street and ends at Feather River Boulevard, east of the Project site and State Highway 70, as shown in Figure 4.3-1c (See Appendix D: Utility Infrastructure). Any proposal requiring an extension of the water main to the Project site would be made to the District Manager of CWS. (City of Oroville, 1995)

### ***Sanitary Wastewater***

#### ***Collection and Transport***

The City of Oroville Department of Public Works provides sanitary wastewater collection services and manages and maintains the City's sewer mains, manholes and other associated infrastructure south of the Feather River. An existing sewer main is located approximately 400-feet west of Feather River Boulevard along Montgomery Street, as indicated in Figure 4.3-1a – 4.3-1e (see Appendix D). The sewer main connects to a gravity collection system that flows to the Sewerage Commission Oroville Region (SCOR) wastewater treatment plant. (City of Oroville, 1995)

#### ***Treatment***

Sewage collected within the City's sanitary wastewater system is transported to the Sewerage Commission Oroville Region (SCOR) facility on South Fifth Avenue. SCOR is the tri-agency commission composed of representatives from the City of Oroville, Lake Oroville Public Utility District (LOAPUD), and the Thermalito Irrigation District (TID), that is responsible for wastewater treatment in the region. SCOR operates an activated sludge sewer treatment plant with a design capacity of 6.5 million gallons per day (MGD). Dry weather flows from the three member agencies range between 3 and 3.5 MGD. Wet weather flows can go as high as 17 -17.5 MGD. Flow in excess of 12 MGD must be stored and treated at a later time. The plant currently has enough capacity to serve more than 9,000 additional equivalent dwelling units or 3 MGD. (City of Oroville, 1995)

### ***Solid Waste***

Municipal and residential solid waste generated in the City of Oroville is collected by Norcal Waste Systems. The waste is transported to a transfer station on Fifth Avenue and then disposed of at the Neal Road Landfill, owned and operated by the Butte County Department of Public Works, approximately 8 miles southeast of Chico. The Neal Road Landfill is a 100-acre Class III landfill, meaning that it accepts only non-hazardous wastes. According to Norcal Waste Systems, Oroville disposed of approximately 14,000 tons of material in 2001. In addition, between 5,000 and 7,000 tons of materials were diverted through source reduction, recycling, and composting programs (Carl Peters, pers. comm.). The existing capacity of the Neal Road Landfill is projected to be adequate through the year 2018, after which additional capacity would be needed. Approximately 160,000 tons of material was disposed of at the Neal Road Landfill in 2002 (W. Eric Dugger, pers. comm.). (City of Oroville, 1995)



### ***Storm Water Drainage***

Butte County and Oroville Department of Public Works are responsible for managing drainage flows at the Project site. The existing storm drain infrastructure at the Project site consists of a 24-inch storm drain culvert that originates at Montgomery Street and discharges to a storm water management pond, identified in Figure 4.3-1c (Utility Infrastructure). The storm water management pond can clog as a result of the accumulation of excessive debris and silt. Oroville's DPW is responsible for preventive and corrective maintenance of the storm water pond (pers. comm., Alan Brown). (City of Oroville, 1995)

### ***Police Department***

The Oroville Police Department (OPD), headquartered on Lincoln Street, serves the 12.16 square miles of incorporated area without a mutual aid agreement with the Butte County Sheriff's Department except in the case of a life-threatening situation. OPD has 22 sworn officers and 10 non-sworn personnel, and an average of 5 reserve officers. The average estimated response times within Oroville are two to three minutes, which is considered adequate to serve present needs. No additional stations have been proposed. (City of Oroville, 1995)

### ***Fire Department***

The Oroville Fire Department (OFD) currently shares headquarters with the Oroville Police Department. New stations are proposed in the following locations:

- South of Oroville Dam Boulevard and Challenger Avenue, west of Chuck Yeager Way, at the Oroville Municipal Airport;
- Ophir Road and Lincoln Boulevard area;
- North of Olive Highway, where Glen Drive intersects the Oroville Quincy Highway; and
- In the Kelly Ridge Road and Hillcrest Avenue area, on the ridge, to replace the California Department of Forestry and Fire Protection station that is now at the base of the ridge.

The OFD participates in mutual aid agreements with the El Medio Fire District (EMFD), the Butte County Fire Department (BCFD) and the California Department of Forestry and Fire Protection (CDFFP). These agreements allow OFD to provide services outside of incorporated Oroville and receive assistance from the other fire services providers in the event of an emergency. In addition, automatic aid agreements

are now in effect with the BCFD and EMFD. Automatic aid implies not only mutual aid in situations of need, but also first response by the fire department that can respond the fastest regardless of jurisdiction. The OFD has 20 paid personnel, 15 volunteers, and one secretary. (City of Oroville, 1995)

## 4.3.2 Regulatory Considerations

### *Oroville General Plan*

The following objectives and implementing policies from the Oroville General Plan are applicable to the Project site.

#### Objectives: Water Supply

- 7.31a Continue to encourage the water purveyors of the region to ensure that adequate water supply is available for the projected population and to developed properties throughout the Planning Area.
- 7.31b Coordinate the land planning process with the water purveyor's planning process to ensure that developments are not approved that can not be properly served with water at the time of completion.
- 7.31c Coordinate with special districts providing water service to adjust service area boundaries where beneficial.
- 7.31d Support water conservation measures.

#### Implementing Policies: Water Supply

- 7.31e Work with the water districts and water company to implement water conservation measures, as necessary.
- 7.31f Coordinate with water districts to educate the public and encourage participation in voluntary water conservation measures, when necessary.
- 7.31g Explore the feasibility of using reclaimed wastewater for irrigation of public landscaping and agriculture.
- 7.31h Encourage the use of drought-resistant landscaping and the use of reclaimed wastewater for agriculture and landscape irrigation supply water.

*Objectives: Wastewater Treatment & Collection*

- 7.32a** Ensure that adequate wastewater collection and wastewater treatment services continue to be available to developed properties throughout the Planning Area.
- 7.32b** Coordinate with each sewer service entity to ensure that adequate advance planning is accomplished to assure “adequate service” will remain available to serve the existing service sector population and the projected population.
- 7.32c** Sewer service studies should be offered for peer review prior to final adoption as a land use and growth control document.
- 7.32d** Restrict the timing of any development proposal that cannot be adequately served at the time of development, to ensure that wastewater collection and wastewater treatment facilities are planned for and available without over-burdening existing facilities.

*Implementing Policies: Wastewater Collection and Treatment*

- 7.32f** Require all development to be connected to a sewer conveying wastewater to the SCOR treatment plant, provided that in areas not served by sewers, development intensity equivalent to a single-family house on a 5-acre parcel may be served by a septic system, if soils provide adequate percolation.
- 7.32h** Inform project developers of the discharge requirements for waste into surface water in conformance with guidelines set forth in the latest revision of the Regional Water Quality Control Board, Region 5 Plan.

*Objective: Waste Management and Recycling*

- 6.14a** Reduce the generation of solid waste, including hazardous waste, and recycle those materials that are used, to slow the filling of local and regional landfills, in accordance with the California Integrated Waste Management Act of 1989.

*Implementing Policy: Waste Management and Recycling*

- 6.14b** Implement measures specified in the Source Reduction and Recycling Element and the Household Hazardous Waste Element.

*Objective: Fire Hazards*

- 8.30a** Work to prevent wildland and urban fire, and protect lives, property, and watershed from fire dangers.

*Implementing Policies: Fire Hazards*

- 8.30c** Within developed portions of the Planning Area, enforce fire protection standards as adopted by the Oroville City Council
- 8.30e** Monitor fire-flow capacity of the water systems throughout the Planning Area, and support all efforts to improve water availability at all locations that have flows considered inadequate for fire protection.

*Butte County General Plan*

The following objectives and implementing policies from the Butte County General Plan are applicable to the Project site.

*Policies: Drainage and Flood Control Facilities*

- 5.3.b** Require adequate drainage improvements for new development.

*Policies: Solid and Liquid Waste Disposal Facilities*

- 5.8.a** Protect the public health and safety of Butte County residents and the natural environment through efficient solid and liquid waste management practices.

### 4.3.3 Project Consistency with Applicable Regulations

*Oroville General Plan**Objectives: Water Supply*

The Project would be consistent with objectives 7.31a, 7.31b, 7.31c, and 7.31d by:

- Coordinating with the California Water Service Company to ensure that adequate water supply is available to serve proposed buildings and restroom facilities in the Project site.
- Adopting the water main extension specifications of the California Water Service Company.
- Promoting drought-resistant native plant landscaping, efficient plumbing and irrigation.

*Implementing Policies: Water Supply*

The Project would comply with implementing policies 7.31e, 7.31f, 7.31g and 7.31h. In particular it would:

- Implement water conservation measures, including drought-resistant native plant landscaping, efficient plumbing and irrigation.

- Educate the public by providing ecological learning and activity services to the community.

Objectives: Wastewater Collection and Treatment

The Project would be consistent with objectives 7.32a, 7.32b, 7.32c, and 7.32d by:

- Ensuring that adequate wastewater collection services are available to serve the Project site facilities, and to meet the demands of the existing service sector population and projected population.
- Assuring approval from the City of Oroville Department of Public Works to extend wastewater collection service to the Project site prior to the initiation of construction activities.
- Providing a sewer service study of the Project site to the City of Oroville for peer review.

Implementing Policies: Wastewater Collection and Treatment

The Project would comply with the implementing policies of 7.32f and 7.32h. In particular it would:

- Extend an existing sewer main that conveys wastewater to the Sewerage Commission Oroville Region (SCOR) treatment plant to the Project site.
- Coordinate with the California Regional Water Quality Control Board, Central Valley Region to ensure proper installation of wastewater collection infrastructure within the Project area.

Objective: Waste Management and Recycling

The Project would be consistent with objective 6.14a by:

- Reducing the generation of solid waste in accordance with the California Integrated Waste Management Act of 1989.

Implementing Policy: Waste Management and Recycling

The Project would comply with implementing policy 6.14b by:

- Implementing source reduction, recycling, and composting measures specified in the Source Reduction and Recycling Element.

Objective: Fire Hazards

The Project would be consistent with objective 8.30a by:

- Working to prevent proposed open space and facilities in the park from fire dangers.

*Implementing Policies: Fire Hazards*

The Project would comply with implementing policy 8.30c and 8.30e by:

- Complying with fire protection standards as adopted by the Oroville City Council.
- Installing several fire hydrants at the Project site in accordance with minimum flow and pressure requirements of the Oroville Fire Department.

*Butte County General Plan**Policies: Drainage and Flood Control Facilities*

The Project would comply with policy 5.3.b by:

- Installing an emergency storm drain overflow outfall to prevent potential surcharging of the storm water management pond during wet weather conditions.

*Policies: Solid and Liquid Waste Disposal Facilities*

The Project would comply with policy 5.8.b by:

- Adopting Best Management Practices (BMPs) for solid waste materials as recommended by Norcal Waste Systems and the Butte County Department of Public Works.
- Conveying wastewater effluent to the City of Oroville's sanitary wastewater system.

#### 4.3.4 Thresholds of Significance

The Project would have an impact with respect to utilities and services if it would:

- Exceed wastewater treatment requirements of the Central Valley Regional Water Quality Control Board.
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Require water supply beyond the amount available to serve the Project from existing entitlements and resources;
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

- Be served by a landfill without sufficient permitted capacity to accommodate the Project's solid waste disposal needs.
- Fail to comply with Federal, state, and local statutes and regulations related to solid waste.
- Result in substantial adverse physical impacts associated with the provision of police and fire services due to a demand beyond established levels, which would require the construction of new or physically-altered facilities resulting in environmental impacts.

#### 4.3.5 Impacts and Mitigation Measures

##### *Less than Significant Impacts*

###### 1. Wastewater Treatment Requirements

All wastewater effluent would be treated offsite at the Sewerage Commission Oroville Region (SCOR) wastewater treatment plant. The installation of a wastewater lift station, a force main, and sanitary wastewater lines would be required to collect and transport wastewater effluent to the SCOR plant. Conveying sanitary wastewater and installing a wastewater lift station within a 100-year flood hazard zone could result in wastewater seepage into the Feather River or groundwater table in the event of a flood. As noted in Chapter 3, the collection and transportation of sanitary wastewater would be designed with the following improvement measures to ensure a *less than significant* impact:

- Pressure-testing of all sanitary wastewater infrastructures to ensure a watertight design.
- Backfilling of wastewater culverts within the 100-year flood plain with two sack sand slurry to a depth of 3-4 feet to reduce the risk of damage.
- Installation of a pump control panel equipped with a high water alarm indicator to monitor the lift station operation.
- Inspections of the wastewater lift station each week.
- Training of maintenance staff on how to flush the wet well in the event of a flood.

###### 2. Expansion of Water and Wastewater Facilities

Project implementation would increase water consumption and the generation of sanitary wastewater at Riverbend Park. However, no new construction of water or wastewater treatment facilities or expansion of existing facilities would be required to

extend water and sanitary wastewater service to the park. Impacts to water and wastewater treatment capacity would therefore be *less than significant*.

The peak and average flow of sanitary wastewater generated from buildings and restroom facilities in the park is estimated at 4, 126 GPD and 3, 126 GPD, respectively. Wastewater effluent generated from the park would be treated at the SCOR wastewater treatment plant, located on South Fifth Avenue. With a total secondary treatment capacity of 6.5 MGD, the SCOR treatment plant operated at approximately 50 percent of its total capacity in 2002. The additional 3,126 GPD generated by the Project would represent less than .01 percent of the total capacity and would not require the construction of new wastewater treatment facilities, or the expansion of existing facilities. (Ray Sousa, pers. comm.)

The peak and average water demand required for potable water service is projected at 2,620 GPD and 1,110 GPD, respectively. CWS is the water purveyor for the Project site. Almost all of CWS's water supply comes from the west branch of the Feather River. CWS stated that it would have available water supply to meet projected demands at Riverbend Park without the construction of new water treatment facilities, or the expansion of existing facilities (Gary Alt, pers. comm.). Two water supply wells would be developed to supply irrigation water to landscaped areas. The peak and average water demand required for irrigation activities at Riverbend Park is estimated at 427 GPM/day and 270 GPM/day, respectively.

### 3. Expansion of Storm Water Drainage Facilities

Development of Riverbend Park would increase the amount of impervious surface area at the Project site, as result of road upgrade and parking area construction activities. Increasing impervious surface cover could increase the volume of storm water that flows to the City's existing storm water drainage facilities. To minimize impacts to the City's storm water infrastructure, runoff from all parking areas would be conveyed to outfalls separate from the City's storm water drain system, as described in Chapter 3. Furthermore, as recommended by the City's Department of Public Works, a 24-inch emergency overflow pipe would be installed 0.5 feet below an existing storm water outfall to prevent potential surcharging of the storm water management pond during wet weather conditions. The emergency overflow outfall would discharge to a landscaped area to facilitate infiltration and groundwater recharge, as indicated in Figure 4.3-1c (Utility Infrastructure). Storm water construction Best Management Practices (BMPs) would also be prepared in conjunction with the final Project design to control erosion and storm water discharges during construction. As a result of these design improvements, impacts to the City's storm water drainage facilities would be reduced to *less than significant*.



#### 4. Expansion of Landfill Capacity

It is estimated that Project implementation would produce 3.6 tons per year (TPY) of non-hazardous solid waste that would be transported to the Neal Road Landfill. The additional 3.6 TPY generated by the Project would represent less than .01 percent of the total landfill capacity and would not contribute significantly to the daily tonnage received by the Neal Road Landfill, which would still be within its maximum daily capacity (W. Eric Dugger, pers. comm.). Consequently, impacts to landfill capacity would be ***less than significant***.

#### 5. Police and Fire Department

The Project would increase the demand for police and fire protection services. However, implementation of the Project would not result in the need for additional police protection personnel or facilities in the area (Chief Mitchell Brown, pers. comm.). The increased demand would not prevent the Oroville Fire Department from meeting its target response time, and construction of new facilities would not be required (pers. comm., David Noel). Impacts to police and fire protection would be ***less than significant***.

### ***No Impact***

#### 1. New or Expanded Entitlements

As mentioned above, the CWS stated that it would have available water supply to accommodate the projected demands at Riverbend Park in a normal year (Gary Alt, pers. comm.). No new entitlements or resources would be required to supply water to the park, resulting, in ***no impact***.

#### 2. Solid Waste Regulations

There are no unusual Project circumstances or conditions that result in an expectation that the Project would not comply with Federal, State, and local statutes and regulations related to solid waste. There is therefore ***no impact*** associated with solid waste regulations.

## 4.4 HYDROLOGY AND WATER QUALITY

### 4.4.1 Environmental Setting

#### *Drainage*

The Project site is bordered by the Feather River on two sides, with a total of approximately 5,400 feet of frontage along the river. Elevations along the river average at about 130-feet (Alan Brown, pers. comm.), with maximum elevations of 160 to 165 feet occurring predominantly in the center of the site and adjacent to Highway 70 north of Montgomery Street atop existing piles of fill. While previous disturbance of the site has given the Project area an erratic topography, the site generally drains towards the river. Low soil permeability and lack of vegetation over a large portion of the Project area have lead to high runoff throughout most of the Project area, increasing the importance of drainage in design and implementation of the Project.

Butte County and Oroville are responsible for managing drainage flows and providing flood protection. Currently, drainage flows are contained by a network of unimproved, natural-bottom channels and improved, stone- or concrete-bottomed channels and pipelines. The Oroville General Plan emphasizes coordination of all drainage considerations within each drainage basin as a critical component of planning long-term drainage improvements and distributing the cost equitably (City of Oroville, 1995).

#### *Flooding*

The Project area's location adjacent to the Feather River carries an inherent risk of flooding. Evidence of scouring and the absence of vegetation is apparent along the shoreline and adjacent areas, particularly on the northwest corner of the property where the Feather River comes from the east and makes a sharp turn southerly. Moreover, the absence of vegetation across much of the site may be due to the continued inundation from floodwaters; however, a complete flood history for the site is not available.

Known periods of inundation in the Project area include flooding in 1907, 1935, 1955, 1963, 1980, 1981, 1982, and 1997. The 1907 and 1935 floods not only inundated the Project area, but floodwaters extended into downtown Oroville at depths of up to 6-feet. Moreover, the 1935 flood wiped out the electric railroad bridge over the Feather River, which was never replaced (Jim Lenhoff, pers. comm.). However, floods occurring after the completion of the Oroville Dam in 1968 have been more localized, with most floodwaters inundating only the Project area and areas immediately to the north and south along the east bank of the Feather River. The floods of the early 1980s, however, washed out many of the trails and other improvements at Bedrock Park, just

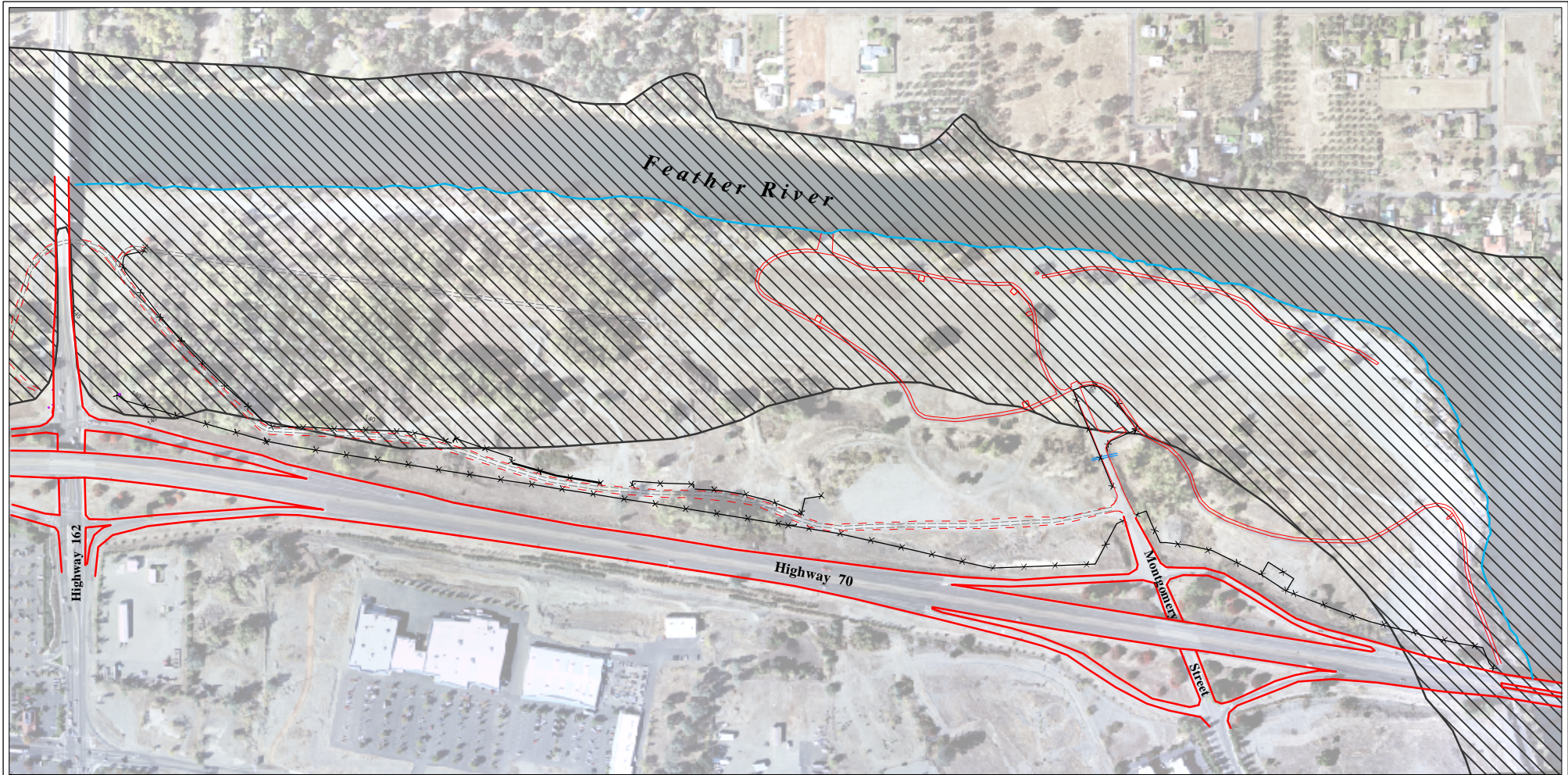
north of the Project area. In addition to flooding along the Feather River, the Project area is located downstream from the Oroville Dam, the largest earthen fill dam in the United States.

Though Oroville Dam provides significant flood control to areas along the Lower Feather River, approximately 80 percent of the Project area is classified as Zone A, or within the 100-year flood hazard zone, by the Federal Emergency Management Agency (FEMA), as shown in Figure 4.4-1. Figure 8-A of the Oroville General Plan also indicates that the Project area lies within the 100-year flood hazard zone. Under the General Plan, development is restricted within the 100-year flood hazard zone, unless all necessary mitigation and improvements are implemented as a condition of Project approval (City of Oroville, 1995).

Lastly, approximately 20 percent of the Project area is designated as Zone X by FEMA, which corresponds to areas outside the 100-year floodplain, areas of 100-year sheet flow flooding where average depths are less than 1-foot, areas of 100-year stream flooding where the contributing drainage area is less than one-square mile, or areas protected from the 100-year flood by levees. Areas in Zone X are not subject to development restrictions under the Oroville General Plan (City of Oroville, 1995).

### ***Water Quality***

The Feather River watershed above Oroville Dam has an area of approximately 3,600 square miles and includes the North, Middle, and South Forks of the Feather River and a number of smaller tributaries. The watershed encompasses portions of the foothill and mountain regions of the northern Sierra Nevada and Southern Cascade Ranges, including areas of steep peaks and ridges, broad alluvial valleys, low foothills and ridges, and long meadows (DWR, 2001). The average unimpaired flow of the Feather River is 5,800 cubic feet per second (cfs) with peak runoff occurring between January and June and low flows occurring between July and December. High winter and spring flows are fed by rains and snowmelt, while low flows during summer and fall are sustained at about 1,000 cfs by late-season snowmelt and groundwater inflow from the higher elevations.



Sources: Aerial Image: DWR 11/01/01 / CAD Base: BBA Engineering 2002 / Flood Zone -- DWR GIS

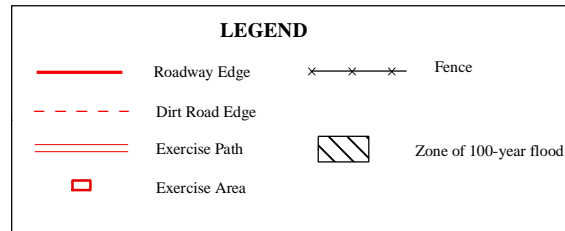
0 250 500 1,000  
Feet

Scale 1 : 6,000  
1" = 500 feet



EDAW

6/11/02



## Riverbend Park Flood Zone

Figure 4.4-1

The Northern District of DWR has collected water quality data approximately bimonthly for several years from the Feather River at the USGS Gaging Station, located 0.4 mile downstream from the Thermalito Diversion Dam and 300 feet upstream from the Fish Barrier Dam. Data collected from January 1992 to May 1997 include field parameters (conductivity, water temperature, dissolved oxygen, pH, turbidity and alkalinity); nutrient content (total ammonia and organic nitrogen, nitrate plus nitrite, ortho-phosphate, and total phosphorous); mineral content (calcium, magnesium, sodium, potassium, sulfate, and chloride); and metal content (arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, molybdenum, selenium, and zinc). Data from June 1997 through July 2000 include only field parameters that were measured from June 1997 through July 2000; quarterly analysis of all parameters was reestablished in August of 2000.

DWR data indicated that nutrient and mineral content in the Lower Feather River are well within established goals and criteria, while field parameters and mineral content exceed established goals and criteria on rare occasions. Benthic macro invertebrate samples taken near the Gauging Station, however, showed low diversity and equitability, indicating poor conditions, most likely resulting from alterations in physical conditions in the river caused by Oroville Dam.

#### 4.4.2 Regulatory Considerations

##### *City of Oroville General Plan*

The General Plan states the following regarding floodplains:

*“Maintaining floodplains as open space buffers urban areas from the waterway and protects lives and property from seasonal or episodic flood dangers. Floodplains can also play an important recreational role, providing water access for fishing; trailways for hiking, bicycling, and equestrian activities; and functioning as links between larger recreation areas and open space areas. In or adjacent to urban areas and where views are not blocked, flood plains provide an aesthetic benefit, visually breaking the urban landscape with an expanse of open terrain.*

*Vegetated portions of the floodplain can serve as valuable wildlife habitat. Floodplains that are unrestricted by flood improvements may provide wildlife corridors as contiguous strips of vegetated cover adjacent to waterways. In addition, floodplains may contain natural vegetation uniquely adapted to the flooding cycles of a particular region.*



*Floodplain condition has an impact since sediment outflow from a watershed can be directed to either a floodplain or waterway depending on the area's topography. If the area is sloped and vegetated advantageously, outflow from a watershed or drainage basin can be deposited within a floodplain rather than a waterway. Conversely, a floodplain that is not sloped and vegetated can have an adverse impact on water quality, with erosion and sedimentation occurring. Floodplains can also serve as collection areas for groundwater recharge."*

In addition, the Oroville General Plan provides the following objectives and implementing policies for drainage and flooding.

Objectives: Drainage and Flooding

- 8.20a** Continue to protect lives and property and ensure that structures existing and proposed, for sites located within floodplains are provided adequate protection from flood damage and hazards.
- 8.20b** Preserve as open space those areas that cannot be protected from flood hazard.
- 8.20c** Support a multi-use concept of floodplains, flood-related facilities and waterways, including, where appropriate, the following uses:
- flood control
  - groundwater recharge
  - water quality preservation
  - mineral extraction
  - open space
  - agriculture
  - nature study
  - habitat preservation
  - pedestrian, equestrian, and bicycle circulation
  - outdoor sports and recreation
- 8.20d** Where feasible given flood control requirements, maintain the natural condition of waterways and floodplains to ensure adequate groundwater recharge and water quality, preservation of habitat, and access to mineral resources.

- 8.20e** Support the intent of Butte County’s flood control policies as specified in the Draft Energy, Natural Resources, and Recreation Element (November 1989).
- 8.20f** Cooperate with all affected or interested public and private agencies involved to ensure that flood control measures do not result in unacceptable degradation of environmentally sensitive areas.

Implementing Policies:

- 8.20i** Use the appropriate City drainage plan to determine whether to require storm drainage analysis for projects within the Planning Area, and if necessary, make storm drainage improvements a condition of development approval.
- 8.20k** Reduce the effects of surface runoff in developing areas by the use of extensive landscaping with an emphasis on native and drought resistant species, minimizing impervious surfaces, and providing for recharge.
- 8.20l** Prior to project approval in the vicinity of a waterway or drainage course, consult Flood Insurance Rate Maps on file with the Planning Department to identify areas that have not been subject to detailed study; if the Project falls within an area that has not been studied, require studies and, if necessary, require mitigation or restrictions on development.
- 8.20n** Encourage timely FEMA map changes and annually incorporate mapped revisions to the 100-year flood zone into City hazard maps.

Furthermore, the General Plan also includes the following objectives and implementing policies with respect to water quality:

Objectives: Water Quality

- 6.12a** Work with the RWQCB to protect, improve and enhance groundwater quality in the region.
- 6.12b** Where feasible, given flood control requirements, maintain the natural condition of waterways and flood plains to ensure adequate groundwater recharge and water quality.

Implementing Policies: Water Quality

- 6.12e** Compile existing groundwater management studies and maps and, where necessary, conduct groundwater mapping studies to result in comprehensive coverage of the Planning Area.

- 6.12f Encourage the utilization of Best Engineering Practices for storm water collection and disposal. *(This policy is consistent with Department of Fish and Game recommendations).*
- 6.12g Participate in the ongoing regional response to the EPA’s stormwater permit regulations.
- 6.12h Require applicants to take and analyze soil samples prior to grading or construction in areas with a historical or suspected presence of toxic materials, such as Superfund sites or other sites identified by the City or concerned agencies.

### ***Butte County General Plan***

The Butte County General Plan Open Space and Conservation elements address the importance of water resources, water quality, and flood control throughout the County. Feather River has been designated as a significant water resource by the County, emphasizing the importance of maintaining high water quality in the Feather River watershed.

The Open Space Element of the General Plan details the importance of water resources and the potential for negative impacts associated with construction and development activities:

*“Water resources are essential to our existence in many different ways. We consume water directly. Water is required for growth of food crops, livestock, forests, fish, and wildlife. We use water for cooking, sanitation, fire protection, and manufacturing. Water resources create recreational and scenic opportunities.*

*To reach surface water bodies precipitation must fall on land and move downward in rivers and streams. The quantity, quality, and rate of flow of water from the land are largely determined by vegetation, soil characteristics, and surface slopes. Man also has a great influence through his control of land uses and vegetation. The management of watersheds is as important as the control of surface waters to the preservation of water resources.*

*Man’s activities often upset the ecological balance of good watersheds. Rates of water evaporation and transpiration can change when trees are cut. Roofs, pavement, and other impermeable surfaces prevent natural absorption and increase*



*run-off. Any development in mountain areas that requires site clearance or road construction can create heavy sediment loads that can ruin fishing waters and fill up channels and reservoirs. The chemical pollutants we produce can harm or destroy animal species.”*

In addition, the Open Space Element also includes the following applicable recommendations:

- Studies should be conducted to determine the erosional characteristics of mountain watersheds in the County.
- The County should control land use and water pollution in accordance with State water quality control guidelines.

The Conservation Element of the Butte County General Plan discusses flood control and water quality in further detail. Conserving and controlling flood, storm, and wastewaters is noted as an important objective throughout the County, and the primary goal of the county’s flood control program is defined as obtaining the optimum use of the water resources in the County while protecting life and property. The Conservation Element also notes that several flood control projects completed since the 1960’s have alleviated the majority of the County’s flooding problems.

In addition, the Conservation Element details the natural factors and human activities that influence water quality and the unique properties of water that make water quality a critical issue. Though natural processes contributing to degradation of water quality are virtually beyond man’s control, the release of industrial, agricultural, and municipal wastes to streams and underground water are controllable to varying degrees. In summary, the Conservation Element states that “It is imperative that the waterways of the County be preserved for domestic consumption, recreation, and wildlife for future generations.”

The Conservation Element includes the following applicable recommendations:

- Work to meet the regulations for water quality defined by the State Water Resources Control Board and the Central Valley Regional Water Quality Control Board.

- Treat waste discharge to lowland fresh waters such that suspended and settleable solids, biological degradable organic substances, biostimulatory nutrients, toxic substances, and chloroform organisms are essentially completely removed and nutrients are reduced to a level that would assure against biostimulation of surface waters.
- Practice good water quality management, including pollution abatement, improved waste treatment, efficient use of water, recycling of industrial water for reuse, and reservoir release to increase low stream flows when needed.
- Review development proposals on the basis of their potential for water use and wastewater disposal, approving only those projects which conform to the standards set by the State Water Resources Control Board and those for which there is assurance that the Project would not have a detrimental effect on the water quality of the County.
- Adopt local ordinances consistent with State and Federal regulations for water quality and which relate to local land use policies.

### ***Central Valley Regional Water Quality Control Board***

The Project area lies in the Redding Region of the Central Valley Regional Water Quality Control Board (RWQCB). The RWQCB's Water Quality Control Plan (Basin Plan) details the existing and potential beneficial surface and groundwater uses in the region, as well as water quality objectives and implementation measures throughout the basin. The plan includes water quality objectives and implementation measures for several parameters, including: bacteria content, nutrient and biostimulatory substances content, chemical constituent, color, dissolved oxygen content, floating material, oil and grease, pH, pesticide content, radioactivity, salinity, settleable materials content, suspended materials content, tastes and odors, temperature, toxicity, and turbidity. The following specific policies and plans included in the Water Quality Control Plan are applicable to the Project.

### ***Storm Water Regulations***

The 1987 Clean Water Act amendments required the USEPA to establish regulations to control storm water discharges associated with industrial activity; discharges from large (serving a population of 250,000 or more) and medium (serving a population of 100,000 but less than 250,000) municipal separate storm sewer systems; and discharges from construction sites. Federal regulations for storm water discharges were promulgated by the USEPA on November 16, 1990 (40 CFR Parts 122, 123, and 124). The State Water Board adopted a statewide general NPDES permit (Order No. 92-08-DWQ, General Permit No. CAS000002) in 1992, which applies to storm water discharges from

construction projects resulting in land disturbance of one acre or more. Such projects are required to obtain construction storm water permits and NPDES permits or waivers prior to construction.

#### Controllable Factors Policy

Controllable water quality factors are not allowed to cause further degradation of water quality in instances where other factors have already resulted in water quality objectives being exceeded. Controllable water quality factors are those actions, conditions, or circumstances resulting from human activities that may influence the quality of the waters of the state, that are subject to the authority of the State Water Board or Regional Water Board, and that may be reasonably controlled.

#### Anti-degradation Implementation Policy

The anti-degradation directives of Section 13000 of the Water Code and State Water Board Resolution No. 68-16 require that high quality waters of the State shall be maintained “consistent with the maximum benefit to the people of the State.” The RWQCB applies these directives when issuing a permit, or in an equivalent process, regarding any discharge of waste which may affect the quality of surface or ground waters in the region.

Under Resolution 68-16, the RWQCB would conduct analyses to determine whether to allow a certain degree of degradation to occur or remain in a given area subject to any change in existing discharge. In addition, any discharge of waste to high quality waters must apply best practicable treatment and control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State. Finally, this policy also requires a Report of Waste Discharge to include information regarding the nature and extent of the discharge and the potential for affects on surface and ground water quality in the region.

#### Policy for Application of Water Quality Objectives

This policy details the process and timeframe required for meeting water quality objectives as stated in the Basin Plan. The policy discusses the nature of the objectives, the waters to which they apply, the designation of mixing zones, determination of schedules of compliance, establishment of numerical and narrative water quality objectives, and evaluation of compliance. All objectives apply to areas throughout the region, and this policy details logistical considerations and strategies to achieve compliance.

In addition, the RWQCB encourages the preparation and submission of an erosion plan for construction in steeper areas and areas where greater than 10,000 square feet of surface area and or more than 100 cubic yards of excavated material would be disturbed. Moreover, projects with the potential to result in storm water pollution may be required to prepare a storm water pollution prevention plan (SWPPP). Development of Riverbend Park would warrant the submission of an erosion control plan and a storm water pollution prevention plan.

### ***California Department of Fish and Game Regulations***

Section 1600 et seq. of the California Fish and Game Code gives CDFG regulatory jurisdiction over projects that would result in reasonably foreseeable potentially significant impacts involving work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel, including ephemeral streams and water courses (Larry Eng, pers. comm.). Impacts that would trigger regulation by the CDFG typically result from activities that:

- Divert, obstruct, or change the natural flow or the bed, channel, or bank of a river, stream, or lake
- Use material from a streambed
- Result in the disposal or deposition of debris, waste, or other material where it may pass into a river, stream, or lake

As the Project does include components involving change of the natural flow of the Feather River and placement of materials where they may pass into the Feather River, the CDFG may require preparation of a Lake or Stream Alteration Agreement (LSAA). In addition, the Project would have an impact on fish and/or wildlife habitat, making the Project subject to fees under Public Resources Code Section 21089 and Fish and Game Code Section 711.4.

### ***Additional State and Federal Regulations***

In addition to the regulations detailed above, the Project is subject to all State and Federal regulations pertaining to water quality, pollutant emissions, and rivers and streams. Project implementation would require a Reclamation Board permit from the Department of Water Resources (DWR) prior to construction within the Feather River Designated Floodway and may require a Clear Water Act Section 404 permit from the U.S. Army Corps of Engineers. All other applicable regulations regarding hydrology and water quality are incorporated into the applicable city and county regulations discussed above.

### 4.4.3 Project Consistency with Applicable Regulations

#### *Oroville General Plan*

Implementation of the Project would include a number of measures to ensure that all applicable city objectives and policies would be met for drainage, flooding, and water quality.

#### *Drainage and Flooding*

Objectives and policies regarding drainage and flooding would be met through the following efforts:

- Proposed structures to be located within the 100-year flood hazard zone would be provided adequate protection from flood damage and hazards. Public restroom facilities would be designed to withstand a 100-year storm, and other structures in the 100-year flood hazard zone would be constructed with reinforced footings. All new sanitary wastewater infrastructure would be pressure-tested to ensure a water tight design. In addition, all maintenance staff would received appropriate training on how to flush the wet well in the event of a flood.
- Areas located within the 100-year flood hazard zone would be preserved as either open space or recreational developments with minimal built structures.
- The Project would provide a multi-use concept for floodplains, flood-related facilities, and waterways, including open space/landscaped areas, outdoor interpretation areas, a 1.5 mile hiking trail loop, a 0.5-mile bicycle path extension, and a 15 acre Elderberry habitat preserve.
- Implementation of the Project would ensure that the boat ramp upgrade and renovation activities are in compliance with CDFG and RWQCB recommendations.
- The Project would ensure that flood control measures do not result in the degradation of existing wetlands.
- Project implementation would utilize extensive landscaping, including drought tolerant hydrozones planted with native plants and cultivars of native plants, as supported in the General Plan.

- All parking lots would be designed to convey storm water runoff into drainage inlets. Storm drain filters would be installed in each drainage inlet to remove soil, dirt, debris, and to minimize the discharge of common storm water effluents such as copper, lead and zinc.
- Flood Insurance Rate Maps (FIRMs) of the Project area would be consulted prior to designing and implementing the Project.
- A storm water drainage analysis would be prepared in compliance with city regulations.

#### Water Quality

All applicable water quality objectives and policies would be met through the following efforts:

- Efforts would be made to ensure coordinating with the RWQCB to protect groundwater quality in the region.
- As mentioned, the Project would preserve as open space those areas located within the 100-year flood hazard zone.
- As mentioned, implementation would ensure that boat ramp upgrade and renovation activities are in compliance with CDFG and RWQCB recommendations.
- Implementation would utilize a feathered transition for roadway and parking lot surfaces. This minimizes the need for curbs and gutters that can entrap trout during flooding periods.
- As mentioned, storm drain filters would be installed in each drainage inlet to remove soil, dirt, debris, and to minimize the discharge of common storm water effluents such as copper, lead and zinc.
- Implementation of the Project would comply with all applicable EPA stormwater permit regulations.
- During implementation, soil sample would be taken prior to grading in areas with a historic or suspected presence of toxic materials, as required.

Inclusion of the above measures during implementation of the Project would ensure compliance with all applicable objectives and policies outlined in the Oroville General Plan.

***Butte County General Plan***

Inclusion of the measures previously noted would ensure that implementation of the Project would meet all applicable policies and regulations detailed in the Butte County General Plan. No additional measures would be required to satisfy county regulations.

***Regional Water Quality Control Board***

Prior to implementation of the Project, all necessary plans, specifically an erosion control plan and a storm water pollution prevention plan (SWPPP), would be prepared and submitted, and all applicable permits, including a construction storm water and NPDES permit, would be obtained from the RWQCB. Implementation would also follow all applicable RWQCB policies and directives to ensure maintenance or enhancement of regional water quality under the Project. The Project would therefore be in compliance with all applicable RWQCB policies and regulations.

***California Department of Fish and Game Regulations***

The Project may result in potentially significant changes to the natural flow and bed of the Feather River and would result in deposition of debris, waste, and/or other material where it may pass into the Feather River. Implementation of the Project would include obtaining all necessary permits, preparing all necessary plans, and implementing all mitigation measures required by the CDFG. The Project would therefore be consistent with all applicable CDFG regulations.

***Additional State and Federal Regulations***

The Project may involve discharge of dredge or fill material into the Feather River and involve the modification of the bank of the Feather River while improving the boat launch. A permit would be required under Sections 404 of the Federal Clean Water Act. In addition, a Board Reclamation permit would be obtained from DWR prior to any construction activities. The Project would therefore be consistent with all applicable State and Federal regulations.

**4.4.4 Thresholds of Significance**

The Project would have an impact with respect to hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements, or create or contribute runoff water that would provide substantial additional sources of polluted runoff or otherwise substantially degrade water quality.

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site or substantial erosion or siltation on- or off-site.
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems.
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Expose people or structures to inundation by seiche, tsunami, or mudflow.

#### 4.4.5 Impacts and Mitigation Measures

The Project involves several features that have the potential to impact hydrology and water quality in and downstream from the Project site, including grading, construction of facilities in a 100-year floodplain, and construction activities in and along the Feather River. Impacts to hydrology and water quality, including their level of significance and necessary mitigation measures, are discussed below.

##### ***Less than Significant Impacts***

###### ***1. Drainage Pattern and Streambed Alteration***

Development of the impervious boat launch parking area could constitute a significant impact due to the potential increase in storm water runoff that may enter the Feather River. In addition, other construction activities associated with the Project, such as site preparation, and surface grading have the potential to adversely impact the drainage pattern of the Project site and result in flooding, erosion, or siltation on- or off-site. Renovation of the boat launch area, including minor grading, installation of pilings, and widening of the boat launch would also result in some degree of alteration to the streambed of the Feather River both during, and after construction, which could result in substantial erosion or siltation on- or off-site. All significant impacts related to



drainage and streambed alteration would be reduced to *less than significant* through the Project design by implementing the following measures:

- All parking lots (including the boat launch parking area) would be designed to convey storm water runoff into drainage inlets. Storm drain filters would be installed in each drainage inlet to remove soil, dirt, debris, and to minimize the discharge of common storm water effluents such as copper, lead and zinc. The filters would be inspected monthly and replaced each fall or as necessary. Once filtered, the storm water runoff would be discharged through outfalls and conveyed across landscaped areas to facilitate groundwater recharge. Excess runoff from landscaped areas would flow via swales into retention basins or drain rock leach trenches. Storm water runoff from the boat launch parking area would be collected in an outfall, filtered, and discharged in compliance with CDFG requirements.
- Implementation of storm water construction Best Management Practices (BMPs) and preparation of an erosion control and storm water pollution prevention plan (SWPPP) in compliance with the Central Valley Regional Water Quality Control Board that may include, but not be limited to, a combination of temporary sediment basins, hydroseeding of unprotected erodible soils, silt fences, straw wattles, jute netting, and erosion control mats.
- Carrying out the boat ramp upgrade and renovation activities in compliance with the CDFG Streambed Alteration Permitting guidelines and adopting all design measures required by the CDFG to provide adequate protection of the Feather River.

## 2. Water Quality

Construction activities, including site preparation, surface grading, landscaping, new construction, and use of heavy equipment, have the potential to adversely impact water quality in the Feather River. Furthermore, runoff from imported materials, roads and parking areas, and landscaped areas could also contaminate the quality of the receiving waters with sediments, hydrocarbons, heavy metals, and excess nutrients. Lastly, as discussed in Chapter 4.3 (Public Utilities and Services), the extension of water and sanitary wastewater services to the Project site could have an adverse impact on the quality of the receiving waters.

The project design, however, includes several components that address and eliminate all significant impacts to water quality associated with implementation and operation of the Project. As noted in Chapter 3, development of Riverbend Park would include the following design improvements and compliance measures, reducing potential impacts to *less than significant*:

- Implementation of storm water construction Best Management Practices (BMPs) and preparation of an erosion control and storm water pollution prevention plan (SWPPP) in compliance with the Central Valley Regional Water Quality Control Board that may include, but not be limited to, a combination of temporary sediment basins, hydroseeding of unprotected erodible soils, silt fences, straw wattles, jute netting, and erosion control mats.
- Consultation with the Central Valley Regional Water Quality Control Board to determine whether a National Pollutant Discharge Elimination System (NPDES) construction dewatering permit would be required for construction activities at the Project site.
- Consultation with the U.S. Army Corps of Engineers to determine whether a Clean Water Act Section 404 permit and water quality certification would be required during the construction of the boat launch.
- Completion of DWR Reclamation Board permit prior to the initiation of construction.
- Adoption of all mitigation measures required by the CDFG to provide adequate protection of the Feather River.
- Inspection and minimization of import materials to prevent the potential contamination of storm water runoff.
- Installation and maintenance of storm drain filters at parking areas to prevent soil, dirt, and debris and to reduce heavy metal contaminants .
- Pressure-testing of all sanitary wastewater infrastructure to ensure a watertight design.
- Backfilling of wastewater culverts within the 100-year flood plain with two sack sand slurry to a depth of 3-4 feet to reduce the risk of damage.
- Training of maintenance staff on how to flush the wet well in the event of a flood.

### 3. Groundwater Depletion

Two water supply wells would be drilled on the Project site to provide water for irrigation activities, whereas potable water for use at the Project site would be provided by the California Water Services Company from off-site sources. As detailed in Chapter 3, Project Description, each well would be drilled to a depth of 25 feet employing a truck-mount rotary drill, and projected water use for irrigation from the proposed wells is 427 gallons per minute (GPM) at peak demand, with an annual average of 200 GPM (Greg Melton, pers. comm).

Development of the water supply wells has the potential to contribute to groundwater depletion and adversely impact the production rate of existing wells in the Project area. However, no substantial groundwater depletion or interference with groundwater recharge is expected from the Project (Greg Melton, pers. comm.). In addition, consultation with the County and completion of a groundwater study, if required, prior to drilling and using the proposed wells eliminates the potential for significant impacts associated with groundwater depletion. Furthermore, compliance with all applicable permits, to be obtained prior to construction as discussed in Chapter 3, would ensure that all impacts would be *less than significant*.

### 4. Impedance or Redirection of Flood Flows

The Project site has been included in the Federal Emergency Management Agency's (FEMA) regional flood hazards mapping program, which indicates that approximately 80 percent of the site is located within a 100-year flood hazard zone. Though development of the park would include the development of new facilities and picnic areas as well as extension of utilities in the 100-year flood hazard zone, the design of the project area and proposed facilities would eliminate all significant impacts associated with impedance or redirection of flood flows. As mentioned in Chapter 3, Project Description, newly constructed recreation structures located within the 100-year flood plain would be provided protection from flood damage and hazards, and the onsite lift station, gravity sewer, and force main would be constructed water tight to protect against infiltration in the event of flooding. All other structures to be located in the 100-year flood plain, including picnic areas, shade structures, overlook towers, and a children's play area, would be constructed with a reinforced footing.

Impedance or redirection of flood flows resulting from the few facilities that would be constructed in the 100-year flood hazard zone would be minor. The few recreation facilities, picnic tables and the upgraded boat ramp would not significantly impede or redirect flood flows or damage surrounding areas. All impacts associated with

impedance or redirection of flood flows would remain onsite, and therefore be ***less than significant***.

#### 5. Flood Hazards: Potential for Dam and Levee Failure

The Project area is located downstream from the Oroville Dam. In the event of dam failure the Project site would be flooded and park personnel and visitors would be exposed to a significant risk of loss, injury, or death due to flooding. The Oroville General Plan notes that “much of the western portion of the [City] could possibly be affected by floodwaters following a failure of the Oroville Dam. According to the Department of Water Resources (DWR), which operates the facility, engineering studies done after the 1975 earthquake to determine whether the structure could withstand a 6.5 Richter magnitude event showed conclusively that it could. The DWR believes that a 6.5 Richter magnitude earthquake exceeds the maximum credible earthquake for the region.” Due to this analysis by DWR, a ***less than significant*** impact is appropriate for the Project site.

#### 6. Exceedance of Storm Water Drainage Capacity

Development of Riverbend Park would increase the amount of impervious surface area at the Project site, as a result of paving road and parking areas. Increasing impervious surface cover could increase the volume of storm water that flows to the City’s existing storm water drainage facilities. To minimize impacts to the City’s storm water infrastructure, runoff from all parking areas would be conveyed to outfalls separate from the City’s storm water drain system, as described in Chapter 3. Furthermore, as recommended by the City’s Department of Public Works, a 24-inch emergency overflow pipe would be installed 0.5 feet below an existing storm water outfall to prevent potential surcharging of the storm water management during wet weather conditions. The emergency overflow outfall would discharge to a landscaped area to facilitate infiltration and groundwater recharge, as indicated in Figure 3.4-1c (Utility Infrastructure). Storm water construction Best Management Practices (BMPs) would also be prepared in conjunction with the final Project design to control erosion and storm water discharges during construction phases. As a result of these design improvements, impacts to the City’s storm water drainage facilities would be reduced to ***less than significant***.

### ***No Impact***

#### 1. Seiche, Tsunami, and Mudflow

The potential for inundation by tsunami is minimal as a result of the park’s inland location. In addition, there is no evidence of on- or off-site mudflow activity. Though there is potential for development of seiche in Lake Oroville, the Project area is not

subject to inundation by waters from the reservoir except in the event of a dam failure, discussed above. There is therefore ***no impact*** associated with from seiche, tsunami, or mudflow.

## 4.5 CULTURAL RESOURCES

Cultural resources can include evidence for prehistoric Native American occupation, historic sites such as buildings or structures and Traditional Cultural Properties vital to the identity and cultural practices of present-day Native American populations. A number of cultural resource inventories have taken place within and in the vicinity of the Project area (Offermann 1988, Offermann and Noble 1991, 1992 and Scott 1999). Based on these studies and various historic property registers such as the National Register of Historic Places (NRHP) and the California Register of Historic Resources (CRHR), a picture of the distribution of prehistoric and historic sites in the vicinity of the Riverbend Park can be developed.

### 4.5.1 Environmental Setting

#### *Prehistory*

Human occupation of the Riverbend Park region may date as early as 10,000 years ago when Paleo-Indian populations may have lived in the area. Although commonly perceived as big-game hunters who relied solely on great herds of Pleistocene megafauna such as mammoth, mastodon and bison for food and a variety of materials, there is little archaeological evidence supporting the idea that this was the prevalent life-way. More than likely, these early Native Americans exploited a wide variety of flora and fauna available throughout the Sacramento valley area. Paleo-Indian occupation sites and artifacts themselves are extremely scarce and much of the evidence for an early human presence in the area may be deeply buried under alluvium (Moratto 1984), destroyed by dredge mining or present in areas where archaeological investigations have not yet occurred.

Much of the knowledge of later periods of the prehistory of the Project area comes from the intensive archaeological investigations conducted along the Feather River in association with construction of Oroville Dam (Ritter 1968, 1970). Little is known regarding Native American cultures immediately following the Paleo period but the later cultural sequence of this area has been divided into four phases based on material culture and associated relative and absolute dates. These phases include the Mesilla, Bidwell, Sweetwater, and Oroville. Some artifacts, including choppers, hammer stones, scrapers, and spire-lopped Olivella beads appear to remain unchanged throughout the four phases. However, variation in other artifacts and differing subsistence, settlement and technological systems help define these distinct cultural manifestations (Kowta 1988, Moratto 1984, Nilsson et al. 1995).

The Oroville Phase (400 BP to 150 BP) represents the late prehistoric and ethnographically documented Konkow (Maidu). During this time, there appears to have been a marked increase in population and in the diversity of artifact forms. Clamshell disc beads, Olivella beads and ornaments made from Haliotis shell, all excellent temporal markers, are found in increasing quantities along with bird bone tubes, gaming bones and a variety of other distinctive items (Kowta 1988, Moratto 1984).

During the Oroville Phase, Konkow contact with European populations gradually increased, often with disastrous consequences. At least one devastating malaria epidemic in 1833 is believed to have been brought by trappers to the Central Valley Indians, including the Maidu (Cook 1955). This single epidemic has been estimated to have killed up to 75 percent of the native population. However, it was the Gold Rush of 1849 with its associated crush of European populations and disease that caused the most severe and lasting damage to Konkow society and culture.

### ***Ethnography***

The Project area is located in the ethnographic territory of the Konkow people, also known as the Northwestern Maidu (Riddell 1978). The Konkow are one of three major groups identified as Maidu, the other two being the Mountain Maidu to the northeast and the Nisenan to the south. The Konkow language was spoken in a number of dialects along the lower reaches of the Feather River Canyon, in the surrounding hills, and in adjacent parts of the Sacramento Valley.

The major Konkow villages contained semi-subterranean assembly and ceremonial lodges and provided a central spiritual and political focus for affiliated satellite villages. These outlying communities came together in the larger sites for ceremonial performances as well as other events and activities. Ethnographic research indicates that each centralized community consisted of three to five villages, with a population of approximately 200 individuals and a defined territory (Kroeber 1925; Riddell 1978).

Like most California Native American groups, the Konkow practiced a mixed gathering, fishing, and hunting economy. Floral resources were gathered in an annual cycle in which target plants were procured as they ripened. Families moved to strategic locations to harvest desired foods including various greens, roots, seeds, nuts, and berries. Pine nuts from both sugar and foothill pines were valued, but the most important vegetal food was the acorn from various species of oak. This staple food was typically ground into a coarse meal and leached of its bitter acids for immediate consumption. Whole acorns and processed meal were also stored in granaries for winter use.

The Feather River offered a wealth of fish resources with anadromous species, especially salmon, providing a particularly important and abundant food resource. Hunting also provided important sources of food and game animals included deer, elk, rabbit, squirrel, quail, pigeon, duck, and geese. Deer were often taken in large cooperative drives in which the animals were herded over a cliff or into an area where concealed hunters could more easily kill individual animals (Dixon 1905; Kroeber 1925; Riddell 1978).

### *History*

The settlement of Riverbend Park and the Oroville region by Europeans largely began when gold was discovered in the area in 1849. Oroville was initially named Ophir City, after fabled gold mines in southern Arabia (McGie 1982). In 1854, after officials discovered that a town in Placer County had already been named Ophir, the settlement changed its name to Oroville (Gudde 1969). By 1856 Oroville had grown into an incorporated city of more than 4,000 people, making it the fifth largest town in California (McGie 1982). During the 1850s, Oroville developed into a typical Gold Rush boomtown, complete with a main street surrounded by miners' cabins and tents. By the end of the 1850s, however, with easily extracted placer deposits largely exhausted, Oroville's economy shifted towards agriculture.

Wheat, citrus and olive production in the late 19th century became especially important as miners began settling down with their families to farm rather than to prospect for gold. Wheat became the predominant agricultural commodity grown in the Oroville area, especially during the 1860s as the Civil War disrupted the supply in the eastern states. With the completion of a ferry crossing (1852), a grist mill (1858) on Montgomery Street, and a railroad line from Marysville to Oroville (1864), Oroville became a significant trading point for grain growers in the area.

During the 1890s, with the development of river dredging, mining again became an important industry in the area. Gold dredging along the Feather River transformed Oroville into the "mother dredging field of the state" (Mansfield 1918:328). From 1898 to 1916, Butte County was one of the most important gold-producing counties in California (McGie 1982). After about 1916, the placer deposits began to be exhausted and by 1930, dredging companies no longer found it possible to continue operations and moved out of the Oroville area.

The huge deposits of gravel and boulder tailings resulting from the dredging operations were eventually used in the construction of Oroville Dam during the early 1960s (Talbitzer 1987). The dam was completed in 1968 and provides water for agriculture, hydroelectric power, and recreation.



### ***Literature Review Summary***

Prior to conducting a cursory examination of the Project area, a records search was conducted through the Northeast Information Center of the California Historical Resources Information System, Department of Anthropology, California State University, Chico. This review incorporated Department of Parks and Recreation (DPR) Series 523 Primary Record and Archaeological Record forms and records and maps for archaeological sites and surveys in Butte County. Additional sources were reviewed as well, including:

- National Register of Historic Places - Listed Properties and Determined Eligible Properties (Computer Listings 1966 through July, 2000 by the National Park Service)
- California Register of Historical Resources (2002)
- California Inventory of Historic Resources (1976)
- California Historical Landmarks (1996)
- California Points of Historical Interest (1992)
- Directory of Properties in the Historic property Data File for Butte County (2002)

Although numerous prehistoric and historic cultural resources are known to exist in the vicinity of the Project area, only one has been recorded directly within the park as part of a cultural resources inventory for a proposed bike path (Jones & Stokes, 1999). The sole historic resource noted is a fragmentary railroad grade (Site P-04-1442) extending north-south through the southern half of the Project area (Figure 4.5-1). Although further documentary research would be necessary to confirm the affiliation of this grade, it may be a portion of the Sacramento-Northern Railway as noted on 1942 and 1952 USGS topographic quadrangle maps. In addition, a poured concrete bridge support is located in the vicinity of this grade on the eastern bank of the Feather River (Figure 4.5-2). This feature has apparently not been recorded. No prehistoric sites, features or artifacts have been recorded within the park.

Although no documentation specific to the Project area was found, the entire area appears to have been heavily disturbed likely by dredge mining and/or aggregate mining for the Oroville Dam, constructed in the 1960s. Due to the eroded condition and random nature of these tailings, determining exact periods of deposition and formation is difficult at best if not impossible.



**Figure 4.5-1 Fragmentary Railroad Grade**



**Figure 4.5-2 Concrete Bridge Supports**

#### **4.5.2 Regulatory Considerations**

##### ***California Register of Historical Resources and National Register of Historic Places***

The significance of cultural resources within the Project area is measured against the criteria outlined in the California Register of Historical Resources (CRHR) and the National Register of Historic Places (NRHP). The California and National registers

require that sites eligible for listing be afforded degrees of protection ranging from preservation to the mitigation of adverse impacts.

Determining the CRHR/NRHP eligibility of historic and prehistoric sites located within the study area is guided by the specific legal context of the site's significance as outlined in sections 15064.5(b), 21083.2 and 21084.1 of the Public Resources Code (PRC). National Register of Historic Places (NRHP) eligibility is based on similar criteria outlined in Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470). In both the CRHR and NRHP, cultural resources are defined as buildings, sites, structures or objects that may have historical, architectural, archaeological, cultural or scientific importance. A cultural resource may be eligible for listing on the CRHR and/or NRHP if it:

- is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- is associated with the lives of persons important in our past;
- embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of an important creative individual or possesses high artistic values; or
- has yielded, or may be likely to yield, information important in prehistory or history.

In California, if a prehistoric or historic resource does not necessarily meet any of the four CRHR criteria, but does meet the definition of a "unique" site as outlined in the PRC (Section 21083.2), it may still be treated as a significant resource. This is the case if it is "...an archaeological artifact, object or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- It contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- It has a special and particular quality such as being the oldest of its type or the best available example of its type.
- It is directly associated with a scientifically recognized important prehistoric or historic event."

These two sets of criteria operate independently to ensure that significant potential effects on archaeological and historic resources are considered as a part of a project's environmental analysis. PRC guidelines also recommend provisions be made for the accidental discovery of archaeological sites, historical resources or Native American human remains during construction (PRC section 5097.98).

### **4.5.3 Project Consistency with Applicable Regulations**

Any Project related ground disturbing work conducted in the park would be designed to avoid known cultural resources situated within and in the immediate vicinity of the park. Any undocumented prehistoric or historic resources encountered as a result of Project activities would be treated in accordance with CEQA and/or Section 106 regulations as they relate to cultural resources.

### **4.5.4 Thresholds of Significance**

The Project would have a significant cultural resource impact if it would:

- Cause a substantial adverse change in the significance of a historical resource, as defined in Section 15064.5 of the CEQA Guidelines.
- Cause a substantial adverse change in the significance of an archaeological resource, as defined in Section 15064.5 of the CEQA Guidelines.
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
- Disturb any human remains, including those interred outside of formal cemeteries.

CEQA guidelines state that archaeological sites, once identified, are to be evaluated for their significance, and specifically, that the lead agency must determine if the site is a historical resource under Section 15126.4 of the Guidelines. Determination of archaeological significance generally involves archaeological excavation to determine data potentials, site content, integrity of deposits, and the nature of constituent features and artifacts. Effects on archaeological sites may also be considered significant if the site is either a historical resource pursuant to 4850-4858 (Title 14) of the Public Resources Code, or a unique archaeological resource.

- CEQA guidelines also provide guidance in the event of accidental discovery of human remains in any location other than a dedicated

cemetery. In addition, State Health and Safety Code Section 7050.5 prohibits disinterring, disturbing, or removing human remains from any location other than a dedicated cemetery.

#### 4.5.5 Impacts and Mitigation Measures

##### *Significant Impacts*

###### 1. Archaeological resources

The Project site has not had a detailed survey for archaeological resources. There is always a chance that such resources may become apparent once vegetation is removed or during construction excavation. Indicators of prehistoric site activity include charcoal, obsidian or chert flakes, grinding bowls, shell fragments, bone, and pockets of dark friable soils. The disturbance of archaeological resources including human remains as a result of the development of the Project would constitute a ***significant impact***; therefore the following mitigation measure should be incorporated.

##### **Mitigation**

1. If previously unknown archaeological resources or suspected archaeological resources (including human remains) are encountered during construction, all work on the site should be stopped and an archaeologist approved by the FRRPD should be called to inspect the finds. The recommendations of this archaeologist with regard to on-site preservation, recovery and/or documentation of the resources should be implemented before construction re-commences.

Implementation of the above mentioned mitigation measure would result in a ***less than significant*** impact.

###### 2. Paleontological Resources

The site has no known paleontological resources or unique geologic features that would suggest the presence of these resources. However, it is possible that unknown paleontological resources could be discovered during the development of the Project, which represents a ***significant impact***.

##### **Mitigation**

1. If paleontological resources are encountered during construction, all work in the immediate vicinity of the find would be halted and the proper authorities would be notified.

Implementation of the above mentioned mitigation measure would result in a ***less than significant*** impact.

### 3. Human Remains

The site has no known human remains, including those interred outside of formal cemeteries. However, it is impossible to be sure about the presence or absence of human remains on a site until site excavation and grading occurs. The disturbance of human remains during the development of the Project would constitute a ***significant impact***; therefore the following mitigation measure should be incorporated.

#### **Mitigation**

1. As required by State law, in the event that such remains are encountered, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains. The coroner would be contacted and appropriate measures implemented. These actions would be consistent with the State Health and Safety Code Section 7050.5, which prohibits disinterring, disturbing, or removing human remains from any location other than a dedicated cemetery.

Implementation of the above mentioned mitigation measure would result in a ***less than significant*** impact.

### ***Less than Significant Impacts***

#### **1. Historic Resources**

The culturally notable resources identified on the Project site are the former railroad crossing concrete bridge support located along the western edge of the Project site, and the fragmentary railroad grade heading north-south through the site. Project development would affect the fragmentary railroad grade through grading and revegetation activities. As noted below, this resource is not significant; therefore any disturbance would result in a ***less than significant*** impact rating. The concrete bridge support would not be disturbed by Project development.

#### **Oroville Dam Railroad Segment, Reference Number 04-001442**

Historic maps and documents suggest that this resource represents the remains of a segment of the 1960s Oroville Dam railroad grade. The Oroville dam was constructed for the purpose of hauling dirt and rock to the dam construction site. This resource is not 50 years old and lacks sufficient historic integrity and

association with the dam (or the dam-building project) to convey an exceptional level of significance. This resource is not eligible for listing in the NRHP or the CRHR. (Feather River Bikeway Project EA/IS, 2/2000)

## 4.6 BIOLOGICAL RESOURCES

### 4.6.1 Environmental Setting

#### *Historical Context*

Oroville's Riverbend Park occurs along the low flow reach of the Feather River (DWR 2001). The original vegetation of the area consisted of riparian forest prior to the removal of the riparian vegetation by European settlers. The original forest was part of an extensive linkage of riparian vegetation throughout the Great Central Valley that provided habitat for the valley's wildlife. Notable species that are indicative of undisturbed healthy riparian vegetation and adjacent areas are the yellow-billed cuckoo (*Coccyzus americanus*) and Swainson's hawk (*Buteo swainsoni*). The cuckoo requires large tracts of undisturbed riparian forest while the Swainson's hawk requires foraging areas adjacent to riparian areas. Habitat for these species does not occur on the Project site. However, these riparian areas still retain important habitat values for other animal species and are important as a wildlife corridor for movement along the Feather River. The Feather River is important for native fish species and provides a significant amount of spawning habitat for anadromous fish such as steelhead and Chinook salmon.

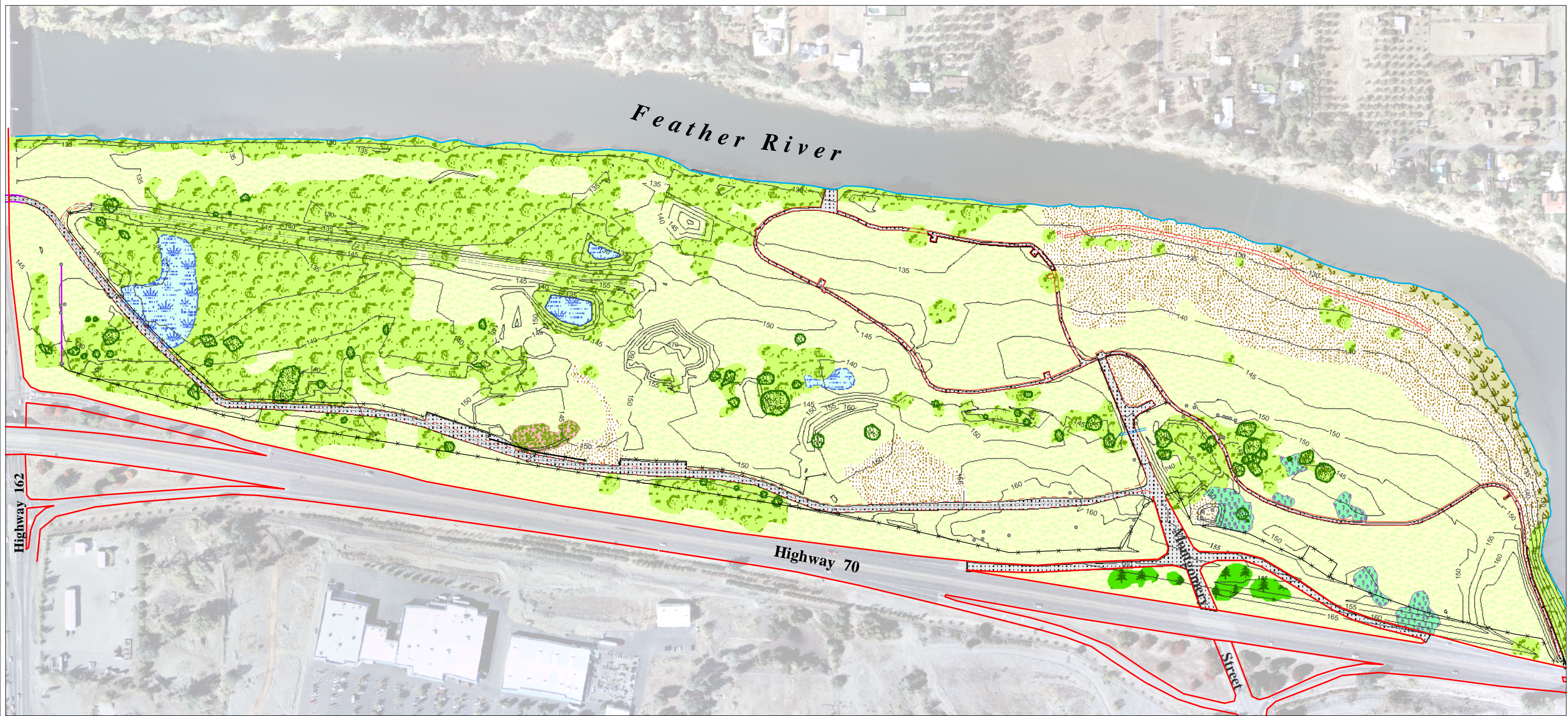
#### *Study Methodology*

Prior to commencing fieldwork, the *California Natural Diversity Data Base* (CNDDB 2001) was searched for occurrences of sensitive plant communities and special-status plant and wildlife species on, and in the vicinity of the Project site. Lists of potentially present sensitive plant communities/habitats and special-status species were generated from these records and from EDAW staff's knowledge of biological resources in the Project vicinity.

An EDAW biologist conducted surveys on February 19, 2002. Survey methodology involved walking transects over the site. Plant and wildlife species observed, as well as plant communities and habitats that could support special-status species, were recorded in field notes. To determine impacts, plant communities and habitats were mapped on a topographic map with an overlay of the Project design (See Figure 4.6-1).

Potential jurisdictional wetlands were mapped based on the occurrence of hydrophytic vegetation (species identified as wetland species by the USFWS in *National List of Plant Species that Occur in Wetlands: California (Region 0)* (Reed, Jr. 1988)), hydric soils, and wetland hydrology.





Sources: Aerial Image: DWR 11/01/01 / CAD Base: BBA Engineering 2002 / Cover Mapping: EDAW, Inc -- Field Survey 2/19/02

0 150 300 600 900 Feet

Scale 1 : 3,600  
1" = 300 feet



### Base Map Features

	Roadway Edge		Dirt Road Edge		Exercise Path		Exercise Area		Fence		Utility Line		Utility Pole		Contour line (Interval = 5 feet)
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### LEGEND

### Vegetation / Cover Types

	Grassland (non-native)		Tree of Heaven
	Himalaya Berry		Elderberry
	Pine		Wetland
	Riparian Forest		Bare
	Riparian Scrub		Road/Track

## Riverbend Park Vegetation

Figure 4.6-1

EDAW

6/17/02



Figure 4.6-1 (back)

### ***Vegetation***

Project site vegetation consists of riparian forest, riparian scrub, Himalayan blackberry, and non-native grassland. The original vegetation of the site would likely have been entirely riparian forest. Subsequent dredging and quarrying has affected the vegetation resulting in large areas of non-native grassland.

#### **Riparian Forest**

The riparian forest that occurs on the Project site consists of Fremont cottonwood (*Populus fremontii*) and red and/or yellow willows (*Salix laevigata* and *Salix lucida* ssp. *lasianдра*) forming a canopy over an extensive amount of understory vegetation. The willow trees average 1 to 1.5 feet in diameter and grow from 30 to 40 feet tall. The cottonwood trees are from 1 to 2.5 feet in diameter and grow to 50 feet tall. A few valley oak (*Quercus lobata*) and western sycamore (*Platanus racemosa*) also occur in the riparian forest. The stands of riparian forest vary in size from less than an acre to more than 10 acres in size.

The understory of the riparian forest consists of shrub and herb layers and the herb layer consists of either non-native grassland or native perennial herbs. The shrub layer consists of a sparse to dense layer of shrubs in the larger forested areas. These shrubs include poison oak (*Toxicodendron diversilobum*), coyote brush (*Baccharis pilularis*), mulefat (*Baccharis* sp.), Himalayan blackberry (*Rubus discolor*), California blackberry (*Rubus ursinus*), and blue elderberry (*Sambucus mexicana*). The non-native grassland portion of the understory occurs in the smaller stands of riparian forest and consists of ripgut brome (*Bromus diandrus*), Italian ryegrass (*Lolium perenne*), and other species of non-native grasses. The native herb component of the understory occurs with both the shrub and non-native grassland understory. Species of native herbs include mugwort (*Artemisia douglasiana*), nettle (*Urtica dioica*), and miner's lettuce.

#### **Riparian Scrub**

Riparian Scrub consists of a mixture of willow, blackberry (*Rubus* spp.) and mesic herbaceous species. This vegetation grows at the edge of the Feather River at the northern end of the site and averages 4 to 8 feet high. The riparian scrub is in transition and would eventually become riparian forest as the vegetation matures.

#### **Himalayan Blackberry**

A dense and large stand of non-native Himalayan blackberry grows within the Project site. This vegetation consists of berry vines intercrossing in a mound approximately 3 to 5 feet tall. Himalayan blackberry is highly invasive.

#### Mesic Herbaceous Vegetation

Mesic herbaceous vegetation consists of herbs adapted to growing in wet environments. This vegetation type occurs at the edge of the Feather River where the ground is perennially wet. Species that occur in this vegetation type consist of bulrush (*Scirpus* sp.), pennywort (*Hydrocotyle* sp.), two species of sedge (*Carex* spp.), willow herb (*Epilobium ciliatum*), rush (*Juncus effusus*), verbena (*Verbena hastata*), knotweed (*Polygonum* sp.), and horsetail (*Equisetum* sp.).

#### Non-Native Grassland

Non-native grassland occurring at the Project site consists of two types. The first type is characterized by a dense growth of non-native grasses while the second type is characterized by a sparse growth of non-native grasses mixed with both native and non-native herbs. The non-native grasses consist of ripgut brome, Italian ryegrass and other species. The non-native grasses tend to grow in areas of deeper soil and often beneath the canopy of the riparian forest or tree of heaven.

The herbaceous phase of the non-native grassland type consists of a mixture of herbs and non-native grasses growing on a wouldow gravelly substrate that resulted from the former dredging and quarrying activity on the site. This vegetation is mostly sparse (5 to 50 percent cover) and short (less than 4 inches tall). Nevertheless, in some areas the cover approaches 100 percent. The dominant species are annual fescue (*Vulpia* sp.), crassula (*Crassula* sp.), mouse-ear chickweed (*Cerastium* sp.), and red-stemmed filaree (*Erodium cicutarium*).

#### Tree of Heaven

The non-native tree of heaven (*Alnus altissima*) is colonizing the Project site. This species is very invasive and has the ability to rapidly colonize disturbed areas. This tree occurs in many clumps throughout the disturbed portions of the site.

#### **Wildlife**

The Project site is relatively valuable for wildlife because of the occurrence of riparian forest and adjacent Feather River riverine habitats. Nevertheless, the history of disturbance from mining and the existing high levels of human activity reduce the habitat value. It is important to note that the area is already a public park and subject to seasonally high levels of human activity.

#### Riverine Habitat

Riverine habitats (streams and rivers) consist of open water below the riverbank. Osprey (*Pandion haliaetus*), mergansers, grebes, diving ducks, cormorants, and gulls forage in

open water habitats. Long-legged wading birds such as herons and egrets forage along the submerged near shore areas. Insectivorous species, including white-throated swifts (*Aeronautes saxatalis*); cliff (*Hirundo pyrrhonota*), barn (*Hirundo rustica*), tree (*Tachycineta thalassina*), and violet green swallows (*Tachycineta bicolor*); black phoebes (*Sayornis nigricans*), and several species of bats forage over waterbodies and adjacent upland habitat. The banks on the Project site gently slope into the river and could provide cover or reproductive habitat for the western pond turtle (*Clemmys marmorata*), river otter (*Lutra canadensis*), and beaver (*Castor canadensis*).

#### Riparian Forest and Himalayan Blackberry

Riparian habitat provides food, water, cover, and breeding habitat for a wide variety of wildlife species that occur at the Project site. Riparian habitat also provides migration and dispersal corridors and cover for many species of wildlife. The canopy of the riparian trees and the shrub layer provides a structurally diverse habitat that supports a diversity of wildlife species at the Project site.

Raccoon (*Procyon lotor*) and opossum (*Didelphis marsupialis*) are expected in the riparian areas where they would forage and seek cover. The black-tailed hare (*Lepus californicus*) also seeks cover in the riparian areas. The red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), and great horned owl (*Bubo virginianus*) are expected to nest and/or roost in the riparian forest. Other species of raptors that could nest in the riparian forest are American kestrel (*Falco sparverius*) and Cooper's hawk (*Accipiter cooperii*). Yellow (*Dendroica petechia*), yellow-rumped (*Dendroica coronata*), and Wilson's (*Wilsonia pusilla*) warblers are also expected to occur in the riparian areas. The yellow-rumped warbler would use the areas during the late fall, winter and early spring for foraging and roosting while the yellow and Wilson's warblers would nest in these areas. Alligator lizards (*Elgaria* spp.), western skink (*Eumeces skiltonianus*), western toad (*Bufo boreas*), and Pacific treefrog (*Hyla regilla*) are also expected to use the riparian forest habitat areas. Western pond turtles have been observed downriver and would be expected to occur on-site (David Bogener, pers. comm.)

#### Non-native Grassland and Bare Areas

Non-native grassland habitat at the Project site is generally sparse and short and wildlife therefore seek refuge in the adjacent riparian forest for cover. Common wildlife species expected in the grassland include black-tailed jackrabbit and western fence lizards (*Sceloporus occidentalis*). Killdeer (*Charadrius vociferus*) forage in the grassland and would be expected to nest in the very sparse areas of the grassland and in bare areas. Other species expected on-site include, California ground squirrel (*Spermophilus beecheyi*), gopher snake (*Pituophis melanoleucus*), California vole (*Microtus californicus*), western kingbird

(*Tyrannus verticalis*), horned lark (*Eremophila alpestris*), western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euphagus cyanocephalus*), and American kestrel.

### ***Fish***

The reach of the Feather River at the Project site is part of the Low Flow Channel. Flows are regulated at 600 cubic feet per second (cfs), except during flood events when flows have reached as high as 150,000 cfs (DWR 1983). Average monthly water temperatures typically range from about 47°F in winter to about 65°F in summer. The majority of the water in the Low Flow Channel is contained by stabilized levees. Side-channel or secondary channel habitat is extremely limited. At the Project site, the Low Flow Channel runs between a bluff and a gently sloping gravel bar and side channels are absent.

The channel banks and streambed consist of armored cobble as a result of periodic flood flows and the absence of gravel recruitment. However, there are nine major riffles with suitable spawning size gravel in the Low Flow Channel. The portion of the Feather River beside the Project site is called the Riverbend pool because of the relatively slow flow and depth (Eric See, pers. comm.). The Riverbend pool is located between two riffles that occur beyond either end of the Project site.

The Feather River at the Project site supports a variety of anadromous migratory and resident fish species, including the native Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead trout (*Oncorhynchus mykiss*). The native fishery includes Pacific lamprey (*Lampetra tridentata*) and the river lamprey (*Lampetra ayresi*) that are also anadromous and migrate to freshwater to spawn. These species die after spawning like salmon. Other species of native fish expected in this reach of the Feather River are hitch (*Lavinia exilicauda*), Sacramento pikeminnow (*Ptychocheilus grandis*), Sacramento suckers (*Catostomus occidentalis*), prickly sculpin (*Cottus asper*), and riffle sculpin (*Cottus gulosus*). The sucker and sculpin feed on the bottom of the river on algae and invertebrates. The hitch and pikeminnow are predators with the hitch feeding largely on invertebrates and the pikeminnow on both small fish and invertebrates. Likely prey fish include the native speckled dace (*Rhinichthys osculus*) and the non-native western mosquito fish (*Gambusia affinis*).

Striped bass (*Morone saxatilis*) and American shad (*Alosa sapidissima*) are two non-native game fish that are more likely to occur below the Project site. Other non-native fish that are probably common in the Feather River are bluegill (*Lepomis macrochirus*), red-ear sunfish (*Lepomis microlophus*), and smallmouth bass (*Micropterus dolomieu*). Several other

fish species are found in the Feather River including a variety of non-native sunfish, bass, and bullheads (DWR 2001).

### ***Special-Status Species***

The Sacramento Valley in the vicinity of Oroville supports a number of special-status plants and animals. These species occur in habitat remnants that have escaped the effects of agricultural and urban land uses. The Project site has experienced extensive impacts in the past, such as dredging for gold and quarrying of the gravels for use in constructing the Oroville dam. These effects removed the riparian forest and would have extirpated any special-status plant species that could have previously occurred on the site. Nevertheless, the riparian forest has recolonized the site providing suitable habitat for special-status wildlife that can re-occupy from adjacent areas. Special-status plant species, that are adapted to wetland and riverine habitats, could have colonized the shoreline of the Project site after having dispersed from upstream sites along the Feather River.

#### *Plant Species*

Special-status plant species that occur in the vicinity of Oroville grow in vernal pools, grassland areas, wetlands, oak woodlands, coniferous forests, alkaline areas, and serpentine areas. The previous land use of the Project site would have completely obliterated these habitats from the park site. Nevertheless, there is potential for some of the wetland plant species to occur on the Project site. These species could colonize the Project site from adjacent areas using the river as a means of dispersal. The potentially occurring special-status plant species are listed in Table 4.6-1 and are discussed below.

#### *California Rose Mallow*

The California rose mallow (*Hibiscus lasiocarpus*) grows along the edges of rivers and creeks in permanently saturated soil. Although not observed on the shore of the Project site, it could potentially occur there.

#### *Four-angled Spike-rush*

The Four-angled spike-rush (*Eleocharis quadrangulata*) grows along the edges of seasonal ponds. Although not observed on the shore of the Project site, four-angled spike-rush could occur there.

**Table 4.6-1  
Special-Status Plant Species Potentially Occurring on the Riverbend Park Site**

SCIENTIFIC NAME COMMON NAME	STATUS			HABITAT (ELEVATION)	FLOWERING PERIOD
	USFWS <sup>1</sup>	STATE <sup>2</sup>	CNPS <sup>3</sup>		
<i>Sagittaria sanfordii</i> Sanford's arrowhead	SC		1B	Wetland standing water of ponds, marshes, and ditches (<300m)	May-Aug
<i>Carex vulpinoidea</i> Fox sedge			2	Wet areas and Riparian woodland (<1200m)	Jun
<i>Eleocharis quadrangulata</i> Four-angled spikerush			2	Edges of seasonal ponds (<500m)	Jul-Sep
<i>Hibiscus lasiocarpus</i> Rose-mallow			2	Banks of creeks and rivers in saturated soil (<40m)	Aug-Sep

<sup>1</sup> United States Fish and Wildlife Service: FE - federal endangered, FT - federal threatened, SC - federal Species of Concern.

<sup>2</sup> California Department of Fish and Game: SE – state endangered

<sup>3</sup> California Native Plant Society: List 1B – plants rare, threatened, or endangered in California and elsewhere; List 2 - plants rare, threatened, or endangered in California but more common elsewhere; List 3 - plants about which more information is needed; List 4 - plants of limited distribution.

Source: EDAW, 2003

#### *Fox Sedge*

Not much is known of the Fox sedge (*Carex vulpinoidea*) in the Project area except that it was observed in a wet area in or near riparian vegetation in the Oroville Wildlife Area. Fox sedge potentially occurs on the Project site in wet areas.

#### *Sanford's Arrowhead*

Sanford's arrowhead (*Sagittaria sanfordii*) grows in wetland standing water of ponds and sloughs. Although not observed during the fieldwork, Sanford's arrowhead could occur on the Project site.

### ***Wildlife Species***

The combination of riparian forest and the adjacent Feather River provides a variety of habitat types that could be used by special-status species of wildlife. Grassland habitats could also be used by special-status species although on an incidental basis because of the sparseness of the cover. Potentially-occurring special-status species are located in Table 4.6-2.

Some of the special-status species could use the Project site on a seasonal basis for either wintering or nesting. Southern bald eagles (*Haliaeetus leucocephalus leucocephalus*) regularly occur on the site during the winter and nest both up and down river. Other species that either are known to use the site in the winter or potentially could use the



site are Barrow's goldeneye (*Bucephala islandica*), and California gull (*Larus californicus*), merlin (*Falco columbarius*), and sharp-shinned hawk (*Accipiter striatus*). (David Bogener, pers. comm.)

Species that could nest on the site include osprey (*Pandion haliaetus*), Cooper's hawk (*Accipiter cooperi*), western burrowing owl (*Athene cunicularia hypugea*), long-eared owl (*Asio otis*), loggerhead shrike (*Lanius ludovicianus*), yellow warbler (*Dendroica petechia*), yellow-breasted chat (*Icteria virens*), and willow flycatcher (*Empidonax traillii brewsteri*). (Dave Bogener, pers. comm.) Nesting habitat occurs on the bluff face of the river on the opposite bank for bank swallow (*Riparia riparia*). The Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), and the Sacramento Valley tiger beetle (*Cicindela hirticollis abrupta*), are two species of insects that could occur on the Project site.

**Table 4.6-2**  
**Special-Status Animal Species**  
**Potentially Occurring on the Riverbend Park Site**

COMMON NAME	SCIENTIFIC NAME	STATUS	HABITAT
<b>BIRDS</b>			
bank swallow	<i>Riparia riparia</i>	CS	Vertical bank
Barrow's goldeneye	<i>Bucephala islandica</i>	CS	Riverine
California gull	<i>Larus californicus</i>	CS	Riverine
Cooper's hawk	<i>Accipiter cooperii</i>	CS	Riparian forest
loggerhead shrike	<i>Lanius ludovicianus</i>	CS, FSC	Grassland with shrubs
long-eared owl	<i>Asio otis</i>	CS	Riparian forest
merlin	<i>Falco columbarius</i>	CS	Grassland, mesic herbaceous, riparian woodland
osprey	<i>Pandion haliaetus</i>	CS	Riverine
sharp-shinned hawk	<i>Accipiter striatus</i>	CS	Grassland, mesic herbaceous, riparian woodland
Southern bald eagle	<i>Haliaeetus leucocephalus leucocephalus</i>	FT, SE	Riparian forest, riverine
western burrowing owl	<i>Athene cunicularia hypugea</i>	CS, FSC	Grassland
willow flycatcher	<i>Empidonax traillii brewsteri</i>	SE, F	Riparian forest
yellow warbler	<i>Dendroica petechia</i>	CS	Riparian forest
yellow-breasted chat	<i>Icteria virens</i>	CS	Riparian forest
<b>REPTILES</b>			
western pond turtle	<i>Clemmys marmorata</i>	CS, FSC	Riverine
<b>FISH</b>			
Spring-run chinook salmon	<i>Oncorhynchus tshawytscha</i>	FT, ST	Riverine

**Table 4.6-2  
Special-Status Animal Species  
Potentially Occurring on the Riverbend Park Site**

COMMON NAME	SCIENTIFIC NAME	STATUS	HABITAT
Fall-run chinook salmon	<i>Oncorhynchus tshawytscha</i>	CF,CS	Riverine
Central Valley steelhead	<i>Oncorhynchus mykiss</i>	FT, CS	Riverine
Sacramento splittail	<i>Pogonichthys macrolepidotus</i>	FT, CS	Riverine
Hard head	<i>Mylopharodon conocephalus</i>	CS	Riverine
River lamprey	<i>Lampetra ayresi</i>	CS	Riverine
Green sturgeon	<i>Acipenser medirostris</i>	CS	Riverine
<b>INVERTEBRATES</b>			
Sacramento Valley tiger beetle	<i>Cicindela hirticollis abrupta</i>	FSC	Bare sparse grass
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorbus</i>	FT	Riparian forest
<b>STATUS KEY</b>			
FE	federal endangered		
FT	federal threatened		
FSC	federal species of concern (includes federal Migratory Nongame Birds of Management Concern)		
SE	state endangered		
ST	state threatened		
CS	state species of special concern		
CF	federal candidate species		

Source: EDAW, 2003

#### Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle probably occurs at the Project site. Valley elderberry longhorn beetles occur throughout the Central Valley of California where their larvae feed on the pith inside the stems of blue elderberry. The adults emerge from the elderberry stems in April to mate and lay eggs. The adults remain active until at least June.

The eggs are laid at the ends of the stems of the elderberry bushes. The eggs hatch and the larvae bore into the pith. The larvae feed on the pith as they make their way toward the base of the elderberry stem. The larvae may remain in the stem of the elderberry for one or more years. Before the larvae pupates, it makes an exit hole in the elderberry stem. It is these holes that are indication of the occurrence of the valley elderberry longhorn beetle in elderberries. After pupation, the adult beetle emerges from the pupal skin and exits from the interior of the elderberry stem.

No exit holes were observed in the elderberry plants, but judging from the large number and suitability of the elderberry plants, the valley elderberry longhorn beetle most likely

occurs on the Project site. Because of its status as a federally listed threatened species, certain procedures are necessary to avoid a “take.” These procedures entail maintaining a 20-foot buffer between the elderberry trees and Project features. In addition, if an elderberry bush is removed by the Project, it would have to be transplanted to a mitigation site (USFWS 1999). A conservation easement or other mechanism protecting the mitigation area should be conveyed to the Fish and Wildlife Service (USFWS 1999). Additional mitigation is also required that is based on formulas for impacts to elderberry bushes. Specific mitigation protocols for the valley elderberry longhorn beetle are described in Appendix B.

#### *Sacramento Valley Tiger Beetle*

The Sacramento Valley tiger beetle is a Federal species of concern that could occur in bare or sparsely vegetated areas of the Project Site. Breeding habitat consists of moist soil or sand.

#### *Western Pond Turtle*

Western pond turtles occur in watercourses and water bodies throughout much of California. The western pond turtles feed on fish and invertebrates. They lay eggs in sandy soil adjacent to their aquatic habitat. Loss of breeding habitat and degradation of aquatic habitat are causes for the decline of western pond turtles. Aquatic habitat and basking areas occur at the edge of the bank of the Feather River at the Project site for western pond turtles. The soil may be too compacted to provide habitat for turtle nests. Western pond turtles could occur at the Project site but may not breed there.

#### *Southern Bald Eagle*

Bald eagles regularly winter beside lakes, reservoirs, and large rivers, including the Project site. Most of the eagles migrate north to breed but a few remain and breed locally along the Feather River. Bald eagles feed on fish, waterfowl, and carrion.

#### *Osprey*

Ospreys formerly nested throughout California, but nesting has declined due to loss of habitat and possibly pesticide contamination. Osprey nest in tall trees, often in riparian areas or areas beside water bodies. They feed on fish that they catch by diving into the water, talons first. They could forage on the Riverbend site and roost in the adjacent riparian forest.

#### *Cooper's Hawk*

The Cooper's hawk is a California species of special concern because the CDFG has concerns about the decline of its nesting habitat.

Cooper's hawks breed primarily in secluded stands of hardwoods. Most nests are constructed in dense, closed-canopy stands of six or more trees. The trees selected for nesting are generally the most mature trees in the stand, where canopy cover is highest and where ground cover is most sparse (Shuford 1993). They nest from March to September (Zeiner et al. 1990). Cooper's hawks forage in a variety of cover types, from woodland openings to dense forest. They feed primarily on birds, but also consume small mammals (Shuford 1993).

The CNDDDB (2001) has no record of the existence of Cooper's hawk in the vicinity of the Project site. Nevertheless, the dense stand of riparian forest on the Project site provides suitable nesting habitat and they could potentially nest on the site in the future.

#### Sharp-shinned Hawk

The sharp-shinned hawk is a winter visitor to California and nesting records for California are rare. They are known to nest from Humboldt County east to the Warner Mountains in Modoc County, and from there south to the Transverse Ranges. Nesting occurs in woodland areas composed of coniferous, deciduous, or mixed woodland. Sharp-shinned hawks could occur on the Project site during the winter.

#### Merlin

The merlin is a winter visitor to California. They would be expected to occur at the edge of the riparian forest where they would hunt small birds. They also forage over large open areas. Suitable wintry habitat occurs on-site for the merlin. Merlin could occur on-site during winter although its occurrence would probably be incidental.

#### Burrowing Owl

The burrowing owl occurs in the warmer valleys of California and is associated with agricultural and urban areas that support populations of California ground squirrels (*Spermophilus beecheyi*). Burrowing owls nest in ground squirrel burrows from March to September and use the burrows for shelter year round. They feed primarily on insects and small rodents. (Malette and Gould 1976)

Burrowing owls were not observed on the Project site, nor were any ground squirrels or evidence of their presence (burrows) found. Because of the absence of ground squirrel burrows, burrowing owls would not be expected to occur on the Project site.

#### Long-eared Owl

The long-eared owl is a resident of riparian woodlands where it forages and constructs nests. There has been a severe decline of long-eared owls in California that may have

resulted from the loss of riparian habitat. Long-eared owls could occur in the riparian vegetation of the Project site.

Loggerhead Shrike

Loggerhead shrikes occur in savanna vegetation where they nest in trees or shrubs. They perch in the shrubs and forage in the adjacent grassland areas. Loggerhead shrikes could nest on the Project site in small clumps of shrubs or small trees.

Willow Flycatcher

Willow flycatchers breed in riparian habitats in dense trees that grow to approximately 8 feet tall. Their numbers have been diminished by parasitism by brown-headed cowbirds (*Molothrus ater*) and reduction of their riparian habitat. Suitable habitat for willow flycatchers occurs at the Project site, and they could nest on-site.

Yellow Warbler

Yellow warbler nest in riparian woodlands, dry montane chaparral with scattered trees, and sometimes in montane coniferous forests carpeted with various species of ceanothus (*Ceanothus* spp.) and manzanita (*Arctostaphylos* sp.). The reduction of riparian habitats and parasitism by brown-headed cowbirds has reduced the numbers of Wilson's warblers. Suitable habitat occurs at the Project site for yellow warblers, and they could nest on-site.

Yellow-breasted Chat

The yellow-breasted chat nests in the dense understory of riparian woodlands or forests. Their understory habitat consists of dense willows, blackberry vines, and other shrubs. The reduction of riparian habitats and parasitism by brown-headed cowbirds are likely reasons for the decline of yellow-breasted chats in California. Yellow-breasted chats have been observed immediately downstream from the Project site and breeding habitat occurs on the Project site for yellow-breasted chats (City of Oroville, 1995). Because of the observation nearby and because of the occurrence of habitat on-site, yellow-breasted chat could nest at the Project site.

Barrow's Goldeneye

Barrow's goldeneye is a California species of special concern because of the loss of nesting in California. They regularly winter in the vicinity of the Project site (City of Oroville, 1995) and could occur on the Feather River adjacent to the Project site. Barrow's goldeneye formerly nested in California at high lakes, surrounded by trees, in the Cascade and Sierra Nevada mountains.

### California Gull

California gull is a California species of special concern because nesting areas are subject to disturbance. They regularly spend the winter in the vicinity of the Project site (City of Oroville, 1995). California gull typically nest at protected sites at inland lakes such as Mono Lake east of the Sierra Nevada and Goose Lake in Modoc County. They migrate toward the coast and spend the winter at the coast and in the Great Central Valley of California.

### Bank Swallow

Bank swallows are migratory and arrive in the Central Valley and other areas that have steep banks in the spring to breed. They excavate tunnels in soft areas of the banks and lay their eggs in the tunnels. Bank swallows forage for insects in flight and could forage over Riverbend Pool and the Project site. Nesting habitat occurs on the steep bank opposite the Project site but no habitat exists on the park site.

### Spring-Run Chinook Salmon

Spring-run Chinook salmon enter the Sacramento River between February and June. They remain in pools until they spawn beginning in August and ending in mid-October. The eggs hatch from early November through April. Their migration to the ocean would begin from mid-November (a few weeks after hatching) through June. Some juvenile fish remain in the river and would migrate to the ocean the following year as yearlings.

Spring-run Chinook tend to spawn almost exclusively in the Low Flow Channel. Spawning would occur in the riffles at either end of the Riverbend site. The pool provides resting habitat for adult salmon and rearing habitat for juvenile salmon.

### Fall-Run Chinook Salmon

Fall-run chinook salmon may enter the Feather River as early as April and begin spawning in September. Spawning typically continues through December, with October and November constituting the peak spawning months. Adults three years old typically dominate the run. Once the female deposits her eggs, they remain in the gravel for approximately 60-90 days, depending on water temperature. Once the fry emerge from the gravel, they typically spend little time rearing in the river. The emigration period is generally December through June, with the peak sometime between January and March (DWR unpublished data). A small number of fall salmon (5,000-15,000) may continue to rear in the river throughout the summer. Spawning could occur in the riffles on either side of the Riverbend site.

### Steelhead

Most adults of the Central Valley Evolutionary Significant Unit (population) of steelhead ascend the Feather River from September through January, where spawning takes place rather quickly. Spawning would occur in the riffles such as those at either end of the Riverbend Pool. It is presumed that soon after spawning, those steelhead that survive the journey return to the ocean. It is currently unknown how long adult steelhead stay in the Feather River after spawning and what their post-spawning mortality is. Soon after emerging from the gravel, a small percentage of the fry appears to emigrate. The remainder of the population appears to remain in the river for at least six months to one year. Little data exist on the residence time of juvenile steelhead in the Feather River and studies are currently underway by the Department of Water Resources to gather more information on juvenile rearing and emigration behavior.

The Feather River also appears to have a run of steelhead that migrates into the river in the spring and recent studies indicate that at least some spring and summer spawning is occurring in the Low Flow Channel. (DWR unpublished data) Steelhead spawning could occur in the riffles on either side of Riverbend Pool and the pool provides resting habitat for steelhead.

### Green Sturgeon

Green sturgeon mostly occur in salt water but come into the Sacramento and Feather Rivers to spawn. Spawning habitat consists of deep (greater than 3 meters) and rapidly flowing water. Spawning most likely occurs from March to July with the peak from mid-April through June. Preferred spawning habitat is large cobbles but can vary from sand to bedrock. The sturgeon hatch from eggs and migrate to estuaries before they are two years old. They can remain in the estuary until they are 4 years old before moving to the ocean.

Sturgeon are benthic (bottom) feeders and eat shrimp, clams, and amphipods. They also eat fish such as anchovies. Green sturgeon mature at 130-140 centimeters when they are 15 to 20 years old. The largest fish are over 200 centimeters and are at least 40 years old. Green sturgeon could occur along the Riverbend site during their spawning migrations.

### Sacramento Splittail

The Sacramento Splittail spawns in the Delta region from February through April. Spawning occurs in the lower reaches of the rivers, larger sloughs, and in dead-end sloughs. Splittail spawn on submerged vegetation in flooded areas. Larvae remain in

the vicinity of the wouldow spawning areas after hatching and move into deeper water habitats as they mature.

After spawning, the adults move from the Delta into up-river areas. They formerly occurred as far upstream as Redding and there are old records from Oroville. Habitat exists for Sacramento splittail along the Riverbend site by the Project site and they could occur there.

#### Hardhead

Hardhead are bottom feeders that forage for benthic invertebrates, aquatic plants in quiet water, and occasionally plankton. The small fish feed on mayfly larvae, caddisfly larvae, and small snails while the larger fish eat aquatic plants, including filamentous algae, and crayfish and large invertebrates.

Hardhead mature during their second year and spawn during the following spring. They migrate into smaller tributary streams to spawn in gravel riffles.

Hardhead prefer clear, deep pools with sand, gravel, or boulder substrates and slow water velocities. In rivers, the adult hardhead mostly occur more toward the bottom of the pools, not near the surface. Habitat occurs for hardhead in the Riverbend Pool and they could occur adjacent to the Project site.

#### River Lamprey

The river lamprey is known from the Sacramento, San Joaquin, and Russian rivers, but could occur in other rivers as well. After an estimated 3 to 5 years the larval lampreys (ammocoetes) transform to adult lampreys and migrate to the ocean. The lampreys only spend 3 to 4 months in the ocean before beginning the return migration to the spawning grounds. Spawning habitat consists of gravelly riffles in permanent streams. Like salmon, lampreys die after spawning.

The larvae feed on algae and microorganisms while buried in sandy backwaters or stream edges. The adults can feed in both fresh and salt water and their most common prey are herring and salmon.

As with many anadromous fish species, the construction of dams, diversion of water, pollution, and other factors caused a decline in their populations. Adult river lampreys would be expected to occur along the Riverbend site and they may spawn in the riffles of the Feather River or tributaries.



## 4.6.2 Regulatory Considerations

The Project site is located within the general geographic range of known sensitive plant communities and habitats and special-status plant and wildlife species. Biological resources on the site may fall under agency jurisdictions and be subject to regulations, as described below.

### *U.S. Army Corps of Engineers*

The U.S. Army Corps of Engineers (Corps) is responsible under Section 404 of the Clean Water Act for regulating the discharge of fill material into waters of the United States. Waters of the U.S. and their lateral limits are defined in 33 CFR Part 328.3 (a) and include navigable waterways, their tributaries, and adjacent wetlands. Wetlands that are not adjacent to waters of the U.S. are termed "isolated wetlands" and may not be subject to Corps jurisdiction.

In general, a Corps permit must be obtained before placing fill in wetlands or other waters of the U.S. The type of permit depends on the amount of acreage involved and the purpose of the proposed fill.

### *U.S. Fish and Wildlife Service*

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over terrestrial species formally listed as threatened or endangered under the Federal Endangered Species Act (FESA). An endangered species is one that is considered in danger of becoming extinct throughout all, or a significant portion of its range. A threatened species is one that is likely to become endangered within the foreseeable future. In addition to endangered and threatened species, which are legally protected under the FESA, there are lists of candidate species. A candidate species is one for which the USFWS currently has enough information to support a proposal to list it as a threatened or endangered species. A proposed species is one that is going through the process, and listing is imminent.

The FESA protects listed wildlife species by prohibiting intentional "take", except under permit for scientific purposes. The term "take" is broadly defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct". An activity is defined as a "take" even if it is unintentional or accidental. Under Section 7 of FESA, any federal agency which proposes, funds, permits, or otherwise authorizes a project (such as the Corps of Engineers-see above) that could result in incidental (un-intentional) take of a listed threatened or endangered species must consult with USFWS (or the National Marine Fisheries Service [NMFS], see below) to obtain a "Biological Opinion" ("Opinion"). If the Opinion finds that the

project could result in jeopardy to the existence of a listed species (“jeopardy opinion”), the agency cannot proceed with authorizing the project until it is modified appropriately to obtain a “non-jeopardy” opinion.

### ***National Oceanic and Atmospheric Administration/NMFS***

The National Oceanic and Atmospheric Administration (NOAA) is dedicated to long-term stewardship of the marine and air resources of the Earth. The NMFS, a division of NOAA, is responsible for protection of marine or anadromous fish species listed under FESA. Federal agencies that fund or permit projects that could adversely impact listed threatened or endangered anadromous fish species, such as spring-run Chinook salmon and Central Valley steelhead, must consult with NMFS under Section 7 of the ESA. NMFS must then issue a no-jeopardy opinion for the project to proceed, as described above for USFWS.

### ***California Department of Fish and Game***

The CDFG has jurisdiction over threatened or endangered species that are formally listed by the state under the California Endangered Species Act (CESA). The CESA is similar to the FESA both in process and substance; it is intended to provide additional protection to threatened and endangered species in California. The CESA does not supersede the FESA, but operates in conjunction with it. Species may be listed as threatened or endangered under both acts (in which case the provisions of both state and federal laws apply) or under only one act (Mueller, Esq. 1994).

In addition to the CESA, the California Native Plant Protection Act (NPPA) provides protection to endangered and "rare" plant species, subspecies, and varieties of wild native plants in California. The NPPA's definition of "endangered" and "rare" closely parallel the CESA definitions of "endangered" and "threatened" plant species.

The California endangered species laws prohibit the take of any plant listed as endangered, threatened, or rare. In California, development on private land violates the CESA if a listed plant species is intentionally removed, damaged, or destroyed.

Additionally, the CDFG maintains an informal list of species of special concern. These are broadly defined as plant and wildlife species that are of concern to the CDFG because of population declines and restricted distributions, and/or they are associated with habitats that are declining in California. These species are inventoried in the California Natural Diversity Database (CNDDB) regardless of their legal status. Impacts to species of special concern may be considered significant under CEQA.

According to Section 3503.5 of the California Fish and Game Code, it is unlawful to take, possess, or destroy any birds-of-prey (i.e., species in the orders *Falconiformes* and *Strigiformes*).

The CDFG also has jurisdiction over streams and requires a Streambed Alteration Agreement (Section 1603 of the Fish and Game Code) for alterations such as water diversions, or the fill or removal of material from a natural watercourse.

### ***California Native Plant Society***

The California Native Plant Society (CNPS) is a non-profit scientific organization that has developed unofficial lists of plants of special concern in California. Although CNPS is not a regulatory agency, the California Department of Fish and Game often considers their lists when evaluating impacts under CEQA. A CNPS List 1A plant is a species, subspecies, or variety that is considered to be extinct. A List 1B plant is considered rare, threatened, or endangered in California and elsewhere. A List 2 plant is considered rare, threatened, or endangered in California but is more common elsewhere. A List 3 plant is potentially endangered but additional information on rarity and endangerment is needed. A List 4 plant has a limited distribution but is presently not endangered.

### ***Regional Water Quality Control Board***

Pursuant to Section 401 of the Clean Water Act, Projects that apply for a Corps permit for discharge of dredge or fill material must obtain water quality certification from the Regional Water Quality Control Board (RWQCB) indicating that the Project would uphold state water quality standards. In addition, projects that affect wetlands or waters must meet waste discharge requirements of the RWQCB. The RWQCB may impose mitigation requirements even if the Corps does not.

## **4.6.3 Project Consistency with Applicable Regulations**

The Project could affect wildlife species that are protected under the FESA and/or CESA, and/or the Fish and Game Code. However, measures to minimize impacts to these species are included as part of the Project. Wetlands may temporarily be affected but there would be no permanent loss. The Project would be consistent with regulations protecting wetlands given applicable mitigation.

#### 4.6.4 Thresholds of Significance

The Project would have a significant impact with respect to biological resources if it would:

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or US Fish and Wildlife Service.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydraulic interruption, or other means. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

#### 4.6.5 Impacts and Mitigation Measures

Development of the Project may create additional habitat for upland species and alter the aquatic habitat either through construction along the riverbank or through alteration of the riverbank.

##### ***Significant Impacts***

##### ***1. Valley elderberry longhorn beetle***

The Project site contains elderberry bushes that provide habitat for the valley elderberry longhorn beetle, which is a federally-listed threatened species. Due to the “threatened” status of this beetle, disturbance of the elderberry bushes would constitute a ***significant impact***. The Project incorporates a 20-foot setback between every elderberry bush and Project features, including construction activities. Additional mitigation measures are necessary to prevent “take” of this species, as described below from USFWS 1999 guidelines.

##### **Mitigation**

1. Install construction barrier fencing and minimize disturbance to elderberry shrubs. Barrier fencing would be installed 3 feet from the drip line for six elderberry shrubs growing adjacent to the road, approximately 15 feet from the drip line for 2 bushes growing 15 feet from the park road, and 20 feet from the drip line for all other elderberry plants. Construction barrier fencing would be installed around the base of the elderberry shrubs before construction activities begin. Barrier fencing would be installed to avoid

disturbance to the root and branch systems of the shrubs. During construction, maintenance would be performed to keep the fence in good repair. Construction vehicles, equipment and materials would not be parked or stored in the fenced area. Signs posted around the fenced shrubs would read as follows:

*This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the federal Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines and imprisonment.*

The signs should be readable from a distance of 20 feet and must be maintained for the duration of construction.

2. All construction workers must be instructed about the status of the beetle and the need to protect it and its habitat.
3. Construction staging or storing areas would be located at least 20 feet away from any elderberry shrub drip line.
4. No trimming of elderberry branches of any size would occur during construction.
5. Biological monitors would examine the elderberry shrubs on a daily basis for the first month of construction and thereafter on a weekly basis if the construction workers are adequately protecting the elderberry bushes.

#### 2. Special-Status Fish Species – construction trapping

The special-status species that could occur in the Feather River beside the Project site are: spring-run chinook salmon (federally- and state-threatened), fall-run chinook (federal candidate and California species of special concern), the Central Valley evolutionary significant unit of steelhead (*Oncorhynchus mykiss*) (federally-threatened and California species of special concern), Sacramento splittail (federally-threatened and California species of special concern), green sturgeon (Federal Candidate and California species of special concern), hardhead (California species of special concern), and river lamprey (California species of special concern). Retrofit of the boat ramp could affect special-status fish species. The construction of the boat ramp entails use of steel sheeting to separate the construction area from the rest of the river. Fish species could become trapped within the area enclosed by the steel plating, representing a **significant impact**.

In addition to directly trapping special-status fish species, the retrofitting of the boat ramp could generate sediment that could affect downstream water quality and spawning areas, therefore representing a **significant impact**.

**Mitigation**

NMFS, USFWS, and/or CDFG may require seasonal restrictions (determined on a case-by case basis) for construction in the Feather River during retrofit of the boat ramps to protect Federal or State listed fish species. Those agencies would be consulted during the Section 7 FESA consultation process, and Section 1601 Streambed Alteration Agreement and CESA compliance processes to ensure implementation of any seasonal restrictions as determined for this project and other measures such as those described below:

1. A biological monitor would be present to ensure that no special-status fish are trapped behind the metal sheeting. Any trapped special-status fish would be allowed to swim free and the sheeting would be reinstalled. Any other fish species that are not special-status would be captured and removed from the enclosed area.
2. Retrofitting of the boat ramp entails pumping the water from the construction area. The steel sheeting, in conjunction with pumping, prevents the water from entering the area. Nevertheless, if sediment is observed escaping from the construction area, then a curtain would be hung around the steel sheeting to contain the sediment.
3. A construction worker training program would be instituted to inform the workers of the sensitive fishery resources and the measures needed to protect the fish.
4. A biological monitor would examine the boat ramp retrofit site on a daily basis to ensure that impacts are not occurring.

**3. Special-Status Raptors, Common Raptors, and Special-Status Songbirds**

Special-status raptors (osprey, Cooper's hawk, western burrowing owl, long-eared owl) and common raptors (red-tailed hawk, red-shouldered hawk, and great-horned owl) could nest in the riparian woodland of the Project site. Other species of special-status birds (willow flycatcher, loggerhead shrike, yellow warbler, yellow-breasted chat) could also nest in the riparian woodland or otherwise on-site. Construction activity at the park could affect the nesting of raptors including special-status raptors and cause them to abandon active nests. Construction activity could result in the destruction in the nests of these special-status bird species. This would be a *significant impact* without mitigation.

**Mitigation**

1. A qualified biologist would conduct a survey for nesting raptors 21 days prior to the start of construction, if construction begins between January and the end of July within 250 feet of riparian woodland areas. A 250-foot

buffer should be established around any active raptor nest thought to contain eggs or young. This buffer should be maintained until the young have fledged. The nest site should be monitored and upon fledging of the young, the monitor would notify the Feather River Recreation and Park District. Construction can then continue within 250 feet of the nest upon fledging of the young.

2. A qualified biologist would conduct a survey for nesting birds 21 days prior to the start of construction within 250 feet of riparian woodlands. This survey would be conducted from March through July. If construction begins prior to March and is within 50 feet of riparian woodlands, no survey needs to occur because the birds would either be accustomed to the construction activity or would choose to nest elsewhere. (No birds would be forced from a nest.) A buffer of 150 feet would be established around any nests of willow flycatchers discovered during the survey while buffers of 50 feet would be established around yellow warbler, loggerhead shrike, and yellow-breasted chat nests. The reason for the different buffers is because the willow flycatcher is a State-listed species while the others are species of special concern, a less sensitive category of special-status species. As with the raptor nests, any of these nests found on-site would be monitored until fledging. Construction can resume within the buffered area upon fledging of the young.

#### 4. Wetlands and other Waters of the United States

Wetlands are valuable biological resources that provide important ecosystem functions especially regarding protection of water quality and enhancing biological diversity. Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers regulates discharges of fill into “waters of the United States,” including jurisdictional wetlands. The Project would not result in fill into jurisdictional wetlands, however retrofit of the boat ramps would require discharges of fill into the Feather River, which being a navigable waterway is considered “waters of the U.S.” A Section 404 permit would be required from the Army Corps of Engineers. Based on Federal regulations, conditions of the 404 permit would require measures to minimize impacts to “waters of the U.S.” to ***less than significant*** levels in all cases.

#### ***Less than Significant Impacts***

##### 1a. Special-Status Fish Species – water quality

Construction and landscaping at the Riverbend Park Project site would result in the disturbance of large areas of soil. This soil could become washed into the adjacent Feather River during rain events. This sediment could reduce water quality and harm spawning areas of special status fish species. However, as discussed in the Hydrology and Water Quality section (pg. 4.4-16), the Project design includes several components

that address and eliminate all significant impacts to water quality. This includes the requirement for implementation of construction Best Management Practices, reducing impacts to *less than significant* levels.

1b. Special-Status Fish Species - pollution

Runoff containing oil from the boat launch parking lot could enter the Feather River after Project construction. This oil could add a minor amount of pollution to the river and reduce water quality and affect the fishery including special-status species. However, the project description incorporates design features for the boat ramp parking lot to prevent runoff from entering the Feather River. This impact is therefore reduced to *less than significant*.

2a. Riparian Woodland - understory

Riparian Woodland is an important biological resource because it provides valuable habitat for wildlife and has been greatly reduced in its distribution throughout California. Riparian areas support the greatest diversity of bird species of any vegetation in California and are significant as nesting areas for migrating songbirds and raptors. The Project would locate 9 new tees, fairways, and holes of Frisbee Golf within the existing riparian woodland. This would entail removal of understory and possibly mature trees. The understory is currently impenetrable in some places and this removal of vegetation would facilitate access to wildlife habitat by people and a corresponding reduction in wildlife value. However, the existing riparian woodland is subject seasonally during daylight hours to high levels of human activity as it is in a public park, and the wildlife which occur there have become adapted to this condition. In addition, loss of habitat value in the existing riparian forest through installation of 9 holes of Frisbee golf would be more than offset by restoration of almost 23 acres of riparian forest by removing invasive non-native vegetation and planting native shrubs and trees as discussed in the Project Description, resulting in *less than significant* impacts.

2b. Riparian Woodland – tree removal

Mature native trees, greater than 6 inches diameter base height, may be removed as part of the Project. However, the dozens of native riparian trees proposed to be planted as described in the Project Description throughout nearly 23 acres of riparian forest restoration area on the Upper and Lower Terraces would more than offset this loss, resulting in a *less than significant* impact.

3. Non-Native Species

The Project would result in the planting of non-native species on the park site. These species are: purple sage (*Salvia leucantha*), Yarwood sycamore (*Platanus occidentalis*), Chinese pistache (*Pistacia chinensis*), common hackberry (*Celtis occidentalis*), sawleaf



(*Zelkovia serrata*). In addition, black cottonwood (*Populus trichocarpa*), a native species, but not indigenous to Butte County, is proposed for planting at Riverbend Park. Aleppo pine (*Pinus halpensis*), a non-native species is proposed as part of the screen of the site in the Caltrans right-of-way. Even though these species are non-native, they are non-invasive, and are to be planted as screens along existing roadways and as turf and shade trees in the more developed portions of the park, not in areas of native riparian forest with high wildlife values. In addition, the restoration of nearly 23 acres of riparian forest proposed in the Project Description would more than offset any loss of habitat values caused by planting non-native species; therefore the impacts are ***less than significant***.

#### 4. Effects to the Valley Elderberry Longhorn Beetle

The Project would establish a 20-foot buffer around the clumps of elderberry trees on the Project site. This buffer would protect the elderberry trees from harm due to the Project.

### ***No Impact***

#### 1. Disturbance to Wildlife Dispersal

The Project would not adversely affect the ability of wildlife to disperse up and down river from the Project site because the riparian area of Riverbend Park would be expanded into the upriver portion of the park where riparian vegetation is largely absent. A more or less continuous band of riparian vegetation may enhance wildlife movement up and down river.

## 4.7 GEOLOGY AND SOILS

### 4.7.1 Environmental Setting

#### *Regional and Site Geology*

##### Regional Geology

Oroville is located in a relatively flat region where the Sacramento Valley meets the foothills of the Sierra Nevada. The rocks and sedimentary deposits of the western foothills of the Sierra Nevada are of two geologic classifications; the older “Bedrock Series” and the younger “Superadjacent Series”. (DWR 1977) These classifications refer to when and how the rocks and sediments were deposited. In addition, each classification contains a list of physical properties of the rocks and sediments such as particulate size, color, potential for liquefaction, etc.

The Sacramento Valley and adjacent foothills of the lower watershed, including the Project site, consist of various types of rocks ranging from ancient crystalline basement rocks to relatively recent unconsolidated alluvium. (DWR 2001) Alluvium is any type of clay, silt, sand or gravel that has been deposited by running water. A sediment-free flow below the dam has scoured the river channel immediately downstream from the dam, leaving a substrate of boulders and cobbles. The channel bed and banks become more variable as the river begins to flow through undisturbed older alluvium and floodplain deposits.

##### Project Site Geology

Historic natural streambed deposition from the Feather River has resulted in alluvial deposits of silts, sands, clays, gravels and cobbles on the Project site. (FRBP 2000) The Feather River channel that travels along the northern and western edge of the Project site is part of an eight-mile low-flow-channel that extends from the Fish Barrier Dam to the Thermalito Afterbay outlet. This section of the river also has been impacted by the Oroville Dam, which captures all of the suspended sediment upstream before it reaches the Project site. Sediment free water picks up sediment from the river bank causing river channel erosion. (DWR 2001)

The Project site geology has been impacted by mining activities. Hydraulic mining using high pressure water jets used between the 1850s and 1890s to erode older gold-bearing formations washed large amounts of sediment into the stream system. Hard rock mining also produced large quantities of pulverized tailings. (DWR 2001) A 1926 U.S. Department of Agriculture soil survey map of the Oroville Area characterized the

Project area as consisting mostly of dredge tailings and deposits reworked by dredging. (DWR 1977)

Dredging resulted in a reversal of layers of geologic materials. Since dredging occurred to a depth of 30 to 55 feet, gravelly dredge spoils and tailings were re-deposited in the surrounding areas on top of the fine soil particles from the shallower depths that were deposited first. Although most of the tailings were later used as borrow material for construction of the Oroville Dam, sinuous ridges of cobbles, boulders and gravel still cover large areas of the Project site. These areas support little vegetation and are of no agricultural value. The trees and elderberry bushes located on the Project site are mostly concentrated on the southern half of the site, particularly on the eastern bank of the Feather River. The majority of the Project site consists of ruderal vegetation.

The Project site also has been affected by recurring flooding of the Feather River, which has eroded topsoil from the site. The Feather River flooded in 1980; washing out the lagoon area and bike trail at the adjacent Bedrock Park to the north. The Feather River flooded again in 1981 and 1982. During these floods, river water inundated the Project site, and when the waters receded, topsoil may have been eroded and deposited elsewhere downstream. Floodwaters bearing sediment from upstream also may have deposited sediment on the Project site.

### ***Regional Faults and Seismicity***

Oroville has been characterized as having low-to-moderate magnitude earthquakes at relatively long recurrence intervals, occasionally resulting in minor ground rupture and offset. The nearest fault lines to the Project site are a series of north-northwest trending faults that comprise a zone called the Foothills fault zone or the Foothills shear or suture zone. This system of faults is located approximately 6-8 miles north of Oroville. (City of Oroville, 1995)

Seismic activity along the Cleveland Hills fault resulted in the August 1, 1975 earthquake of magnitude 5.7 on the Richter scale. The Cleveland Hills fault is about 10 miles long and located about 6 miles southeast of Oroville. This earthquake caused about 2.2 miles of surface cracking along the western flank of the Cleveland Hill. (Butte County, 2000) Due to the recent seismic activity along the Cleveland fault; the area around this fault line is classified as an Alquist-Priolo Special Studies Zone subject to special development regulations. The eastern edge of Oroville is within the Alquist-Priolo Special Studies Zone; however, the Project site is not within this zone. (Butte County, 2000)

Several active fault lines, located a considerable distance from Oroville, could potentially pose a seismic safety hazard to the Project site. They are summarized in Table 4.7-1.

**Table 4.7-1**  
**Fault Lines Potentially Affecting the City of Oroville**

	LENGTH	MAXIMUM EARTHQUAKE (RICHTER MAGNITUDE)		ESTIMATED MODIFIED MERCALLI INTENSITY		DISTANCE FROM COUNTY BOUNDARY (MILES)
		CREDIBLE	HISTORIC	MAXIMUM	AVERAGE	
Cleveland Hill	10 miles	6.4	5.7	VII	VII	0
Midland-Sweitzer	80 miles	7.7	6.0-6.9	VIII-IX	VIII	+/- 40 SW
Hayward Calaveras	+/- 160 miles	7.6	+/- 7.0	VII	VI	+/- 70 SW
San Andreas	+/- 200 miles	8.3	8.3	VII	VI-VII	+/- 95 SW
Last Chance Honey Lake	Estimated 100 miles	7.8	5.0-5.9	VIII	VII	+/- 50 East
Russell Valley	10 miles	6.5	6.5	VII	VI	50 East

Source: City of Oroville, 1995

### ***Geologic Hazards***

The City of Oroville General Plan map of geologic hazards includes an Alquist-Priolo Special Studies fault zone, areas of known landslides, areas prone to landslides, areas of Basalt Caprock and areas with over a 30 percent slope including such areas that are prone to landslides or contain known landslides. None of the geologic hazards identified on this map are located on or near the Project site. (City of Oroville, 1995)

### ***Fault Rupture***

Historically, ground surface displacements (also referred to as fault rupture) closely follow the trace of geologically young faults. The Project site is not within an Earthquake Fault Zone, as defined by the Alquist-Priolo Earthquake Fault Zoning Act, and no known active or potentially active faults exist on the site.

### ***Ground Shaking***

Groundshaking intensity is rated on a scale of I to XII using the Modified Mercalli Intensity Scale (MMIS). The rating is determined by observations of the earthquake's effects on people, structures and the earth's surface. The 5.7 magnitude August 1, 1975 earthquake on the Cleveland Hill fault produced a MMIS of VII. In comparison, the Loma Prieta earthquake had an estimated MMIS of VIII, with the areas of most extensive damage obtaining an MMIS of IX (DWR 1977)

The maximum ground shaking intensity anticipated in Butte County is VIII on the MMIS. (Butte County, 2000) This rating is based on the systems of faults and type of bedrock that underlies the county. The Project site could be anticipated to experience strong seismic groundshaking during the life of the Project.

#### Landslides

The City of Oroville General Plan contains a map of known areas of landslides; none of which are located on or adjacent to the Project site. Landslides may occur slowly over a period of hours, days or weeks. Landslides may also occur suddenly, especially as a result of seismic activity.

Generally, sudden landslide activity could result from an earthquake of magnitude 6 or larger on the Richter scale. In this case, the landslide would occur in the area of intense ground motion near the fault (Butte County, 2000). Since the Project site is not in the area of an active fault, the potential for this type of landslide activity would be low.

#### Liquefaction

Liquefaction is the transformation of granular material from a solid state into a liquefied state as a consequence of increased pore-water pressure. Any structures that are constructed on soils prone to liquefaction are likely to collapse if liquefaction occurs. According to the Butte County General Plan, 1977; areas of bedrock throughout the Sierra Nevada are assumed to have no liquefaction potential, but localized areas of valley fill consisting of recent sand and gravel alluvium and/or areas along waterways can have moderate to high liquefaction potential. Since the Project site is located along the Feather River, it is likely to have moderate to high liquefaction potential. (City of Oroville, 1995)

#### ***Oroville Dam Inundation Area***

Since the Project site is downstream of and at a lower elevation than the Oroville Dam; inundation of the site would occur if the dam failed. The most likely circumstance to cause dam failure would be seismic activity. The maximum magnitude of any earthquake likely to occur in the vicinity of the Project is 6.5 on the Richter scale. The Department of Water Resources has concluded that the Oroville Dam would perform satisfactorily in the event of such an earthquake. (City of Oroville, 1995) The 5.7 magnitude earthquake that occurred in 1975 did not result in any structural damage to the Oroville Dam.

### ***Expansive Soils***

Expansive soils are soils that have a potential for shrinking and swelling with changes in moisture content. Structures and roads constructed on expansive soils may be extensively damaged by the shrink-swell process. The majority of the City of Oroville is covered by highly expansive soils according to the Butte County Map. However, the Project site does not contain highly expansive soils. (Butte County, 1974-2000)

## **4.7.2 Regulatory Considerations**

### ***State of California***

The California Code of Regulations' (24 Part 2) California Building Code (CBC) contains enforceable State building standards. The City's Building Official is responsible for enforcing these standards. Section 1629A.2 of the CBC requires that every structure have sufficient ductility and strength to undergo the displacement caused by "upper bound earthquake" motion without collapse. Upper bound earthquake motion is defined as the motion having a 10 percent probability of being exceeded in a 100-year period, or the maximum level of motion that may ever be expected at a building site within the known geological framework (City of Alameda, 1999a).

Under California Public Resources Code Section 2622, the California Department of Mines and Geology (CDMG) has delineated seismic zones that are deemed to be "sufficiently active and well-defined as to constitute a potential hazard to structures from surface faulting or fault creep."

The State geologist is also required to continually review new geologic and seismic data and to revise the earthquake fault zones or to delineate new zones based on new information.

### ***Oroville General Plan***

Objectives and Implementing Policies related to geology and soils are contained in the Safety Element of the General Plan (Chapter 8 – Section 8.10).

#### **Objectives**

**8.10a** Continue to protect lives and property by investigation and minimizing geologic and seismic hazards, or by located development away from such hazards and endorse public awareness program provided by other public agencies.

- 8.10b** Support implementation of Butte County General Plan policies relating to geologic and seismic hazards, and consult a professional geologist where conflicting information exists or where no public information is available.

*Implementing Policies*

- 8.10d** Require areas identified as having significant liquefaction potential to be subjected to a geotechnical study prior to development approval and to mitigate the potential hazard to a level of insignificance; if mitigation is not possible, preserve these areas as environment conservation/safety or agriculture.
- 8.10i** For sites where a preliminary soils investigation indicates the presence of critically expansive soils, surfacing groundwater, or other soil problems, requires geotechnical soils investigations prepared by a registered civil engineer to determine the extent of and mitigation for geologic hazards.
- 8.10j** Encourage project design that minimizes the potential for wind and water erosion to occur. Where necessary, require the preparation and implementation of a soil erosion plan, including soil erosion during construction.

***Butte County***

Findings, Policies and Implementations relating to seismic safety are found in the Butte County General Plan, in the Seismic Safety Element. All applicable regulations include:

- |                  |  |
|------------------|--|
| <b>Finding 2</b> | The only known active fault in Butte County is the Cleveland Fault near Oroville.  |
| <b>Policy 2</b>  | Take into account all known seismic information in making land use decisions. Avoid locating schools, hospitals, public buildings, and similar uses in known active fault zones. |
| <b>Finding 3</b> | The area around the Cleveland Hill fault has been designated as a Special Studies Zone under the Alquist-Priolo act, effective January 1, 1977.                                  |
| <b>Policy 3</b>  | Follow the policies and criteria established by the State Mining and Geology Board within the Special Studies Zone.  |
| <b>Finding 4</b> | Portions of the Sacramento Valley have a generally high potential for liquefaction during a major earthquake.  |
| <b>Policy 4</b>  | Consider liquefaction potential in making land use decisions.  |

**Implementation 4** Require appropriate design of structures susceptible to the effects of liquefaction.

### 4.7.3 Project Consistency with Applicable Regulations

#### *State of California*

As previously stated, no active faults have been identified at the Project site. The nearest delineated active fault zone is the Cleveland Hills fault line that is located southeast of the City of Oroville approximately seven miles from the Project site. Due to no active faults being located in the immediate vicinity, this complies with the State of California's Public Resources Code Section 2622. The California Code of Regulations' (24 Part 2) CBC would be adhered to in the design of the buildings proposed for the Project site. The City of Oroville Public Works department would review and approve the development plans of the Project prior to any construction efforts taking place.

#### *City of Oroville*

As noted in the State of California discussion above, the Project is not located in the immediate vicinity of an active fault, and all new buildings on the project site would be required to have the development plans reviewed by the City of Oroville Public Works department prior to Project approval. Seeing as there is a moderate to high potential risk for liquefaction at the project site, a geotechnical study must be completed prior to development approval (see Policy 8.10d). It is not assumed that expansive soils, surfacing groundwater, or other soil problems would be present at the Project site, yet the required geotechnical study should address these issues as well.

The Project is designed to minimize the amount of wind and water erosion that would occur on the Project site in relation to the soil conditions, due to very little grading and paving. The Project is in compliance with all applicable City of Oroville policies relating to geology and soils, with the exception of 8.10d and 8.10i without a Project specific geotechnical study.

#### *Butte County*

As previously noted in the City of Oroville discussion, the Project site is not located within a State designated Special Study Zone. The Project is designed to be consistent with all applicable City of Oroville building codes, and would be reviewed by the Public Works department prior to approval. As noted in the Butte County General Plan, the majority of the City of Oroville is located on top of highly expansive soils, yet the Project site itself is not. The only area of possible failure to meet applicable County



policies comes from the moderate to high liquefaction potential of the soil at the Project site. A geotechnical study would be required prior to Project approval to ensure that County Seismic Policy 4 is abided by.

#### 4.7.4 Thresholds of Significance

The development of the Project would have an impact with respect to geology and soils if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42.
  - Strong seismic ground shaking.
  - Seismic-related ground failure, including liquefaction.
  - Landslides.
- Result in substantial soil erosion or the loss of topsoil.
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

#### 4.7.5 Impacts and Mitigation Measures

##### *Significant Impacts*

##### 1. Liquefaction of Soil

Due to the proximity of the Project site to the Feather River, there is a moderate to high risk of liquefaction of the soils developed upon (as noted in the Oroville General Plan). This represents a ***significant impact***.

### **Mitigation**

1. The Project applicant shall have a geotechnical report completed prior to Project approval to ensure that the potential for liquefaction of the soil represents a less than significant impact.

### ***Less than Significant Impacts***

#### **1. Erosion and Loss of Topsoil - Construction**

Paving the seven new parking areas would affect the amount of soil exposed. New construction activities would expose soils to wind and possibly rain, which would result in accelerated erosion of topsoil. As noted in Section 3.5, silt fencing would be used around all construction areas to control the loss of topsoil due to erosion, therefore reducing the impact to ***less than significant***.

#### **2. Erosion and Loss of Topsoil - Operation**

Completion of the Project would add vegetation as well as topsoil throughout the site. The paving that is associated with the seven new parking areas would affect the area directly surrounding these non-pervious surfaces, where the runoff of water would occur, yet as noted in section 3.5, the runoff would be controlled with drainage, impedance and/or redirection of flows. The new drainage system (described in detail in Chapter 4.3) in combination with the more vegetated Project site, would reduce the impact on erosion and loss of topsoil to ***less than significant***.

#### **3. Seismicity**

The nearest Alquist-Priolo Special Study Zone is associated with the Cleveland Hills Fault, located approximately seven miles southeast of the Project site. The Project site is not located within a delineated seismic zone as defined by the California Public Resources Code Section 2622, of the California Department of Mines and Geology (CDMG). By adhering to CBC guidelines, a ***less than significant*** impact would result from the Project.

#### **4. Soil stability**

The Project does not propose subsurface development, with the exception of extending underground utility pipes. The soil stability at the Project site represents a ***less than significant*** impact based on review of all applicable City and County regulations, and utilizing “2-Sack Slurry Cement Backfill” around all new piping.

#### **5. Expansive Soils**

The Butte County General Plan does not include the Project site on the figure which notes known areas of expansive soils in and around Oroville, and therefore this issue is

considered a *less than significant* impact. Close adherence to the provisions of the Uniform Building Code, the implementation of foundation recommendations provided by a civil engineer, and Project-specific engineering requirements would be developed during the building permit process.

### ***No Impact***

#### ***1. Septic tanks***

Development of Riverbend Park does not propose the use of septic tanks or alternative wastewater disposal systems. Existing infrastructure would be extended to the new facilities on the Project site and mechanical pumping would be used to transport the wastewater off site. A full description of the water tight wastewater system is described in Chapter 4.3. This represents *no impact* in regards to significance.

## 4.8 TRAFFIC AND TRANSPORTATION

### 4.8.1 Environmental Setting

#### *Local Access*

The Project site is located west of the intersection of Montgomery Street and Highway 70 (Figure 4.8-1). Riverbend Park is bordered by the Feather River to the west and north, Highway 70 to the east, and Highway 162 (Oroville Dam Boulevard) to the south. The roads in this suburban area are generally two-lane, non-divided roads. Lane widths vary from approximately 10 feet to 16 feet.

The only vehicular access to the Project site is from Montgomery Street. Internal Project site circulation is provided by an approximately 10-foot wide gravel road that extends along the eastern border of the Project site, and a paved road that dead ends at the main gravel parking area.

#### *Regional Access*

Regional access to the Project site is provided by Highway 70 to the east, Highway 162 to the south, and Highway 99 to the west (Figure 4.8-2). Highway 70 provides access to Oroville from the north and south. Highway 162 (Oroville Dam Boulevard) provides access to Oroville from the east and west. Highway 99 runs parallel to Highway 70, and services the Greater Sacramento Valley area along with other communities north and south of Oroville. Nearby cities and communities that are provided access by these Highways include Chico, Paradise, and the Greater Sacramento region. Interstate 5, located approximately 41 miles to the west is the main north-south corridor for the State of California.

Highway 70 between Montgomery Street and Highway 162 is a controlled access freeway with two lanes in each direction, north and south. Highway 162 has two lanes in each direction west of Highway 70. To the east of Highway 70, Highway 162 has a total of five lanes. Highway 99 is a north – south roadway that ranges from one lane in each direction to two lanes in each direction.

Table 4.8-1 illustrates the Average Annual Daily Traffic (AADT) volumes for local and regional highways. Table 4.8-2 includes street classifications and Table 4.8-3 includes roadway capabilities.



Source: CSAA 2001 / EDAW, Inc. 2002

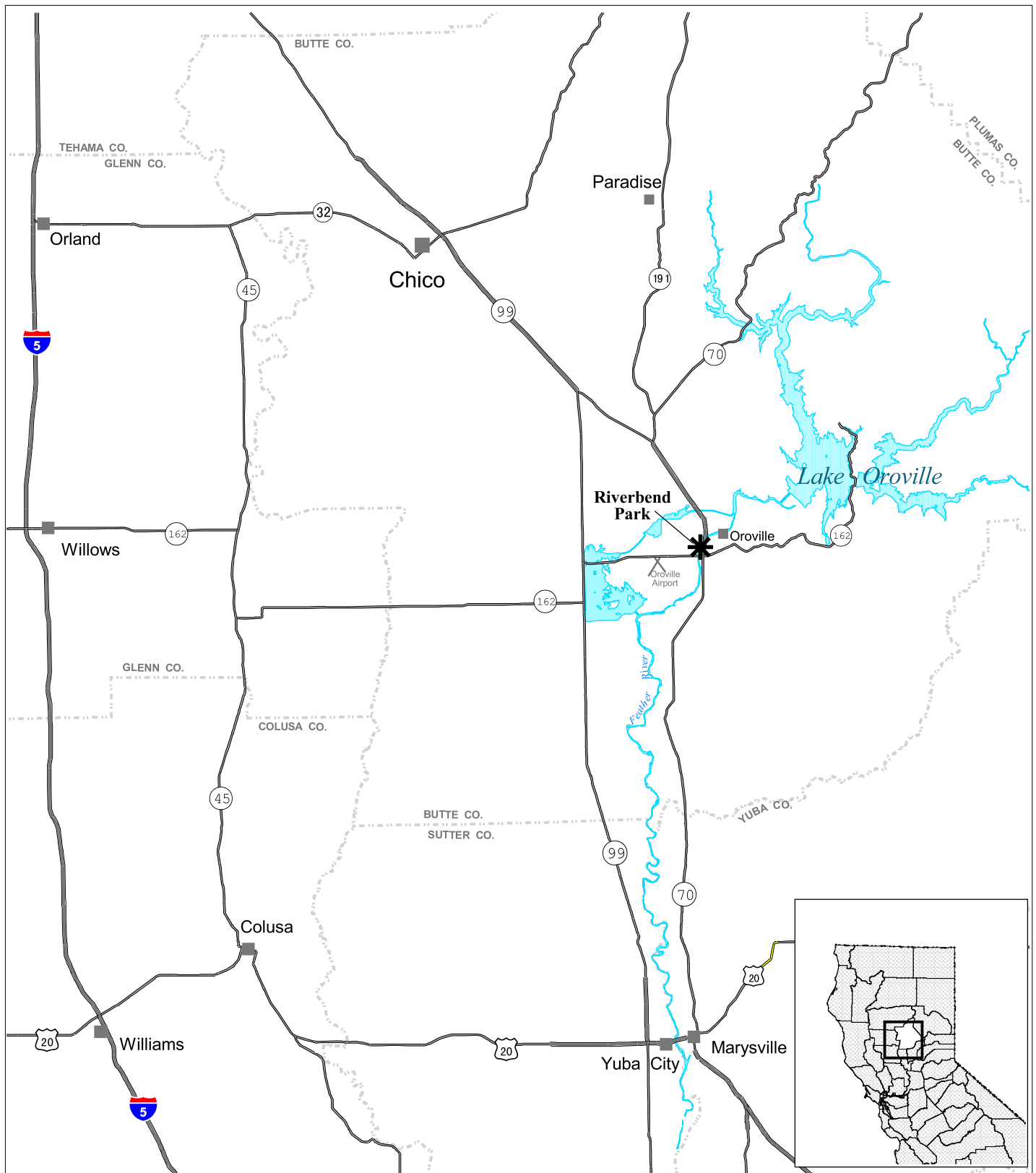
0.5 0 0.5 1.0 Miles



Approximate Scale  
1" = 0.5 mile

## Riverbend Park Local Roadways

Figure 4.8-1



Source: CA Spatial Data Library GIS / EDAW, Inc. 2002

5 0 5 10 Miles



Scale 1 : 443,880  
1" = 7 miles



## Riverbend Park Regional Roadways

Figure 4.8-2

**Table 4.8-1**  
**Average Annual Daily Traffic (AADT) Counts**

ROUTE	DESCRIPTION	DIRECTION	PEAK HOUR	PEAK MONTH	AADT
Highway 70					
	Jct. Rte. 162	-North	1100	15800	14400
		-South	970	15100	12500
	Montgomery Street	-North	1750	20800	19600
		-South	1100	15800	14400
	Grand Avenue	-North	1750	21400	20200
		-South	1750	20800	19600
Highway 99					
	Jct. Rte. 162 West	-North	1100	11800	10500
		-South	1050	11800	10400
	Jct. Rte. 162 East	-North	990	12000	10800
		-South	880	11000	10700
Highway 162					
	Jct. Rte. 70	-East	2550	29000	27000
		-West	1100	12500	11900
	Feather River Blvd.	-East	2700	29000	28500
		-West	2550	29000	27000

Source: Caltrans 2001 Traffic and Vehicle Data Systems Unit

<http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2001all/r162163i.htm>

**Table 4.8-2**  
**Street Classifications**

STREET TYPE	FUNCTION	ACCESS	RIGHT-OF-WAY	DISCUSSION
<b>Freeway</b> <i>Highway 70 (in the Project Area)</i>	Provides for intra- and inter – regional mobility.	Restricted to primary arterials via interchanges.	Varies.	Includes portions of State Route 70.
<b>Arterials</b> <i>Montgomery Street</i> <i>Oroville Dam Blvd.</i> <i>Highway 99 (in the Project Area)</i>	Collect and distribute traffic from freeways to collector streets, and vice versa.	Optimum distance between intersections is approximately ¼ mile.	One to three lanes of traffic in each direction with provision for a left turn median.	Access restriction is crucial to maintaining maximum service to through traffic.
<b>Collectors</b> <i>Feather River Blvd</i>	Serve as connectors between local and arterial streets.	Non-residential driveways and/or intersecting streets should be no closer than 300 – 400 feet apart.	One or two lanes of traffic in each direction within a 60 or 84 foot right-of-way.	
<b>Local Streets</b>	Provide access to parcels.	Access is not restricted.	Two lanes with 60-foot rights-of-way.	Local streets are the largest part of the City's circulation system.

Source: City of Oroville General Plan, Circulation Element, 1995

**Table 4.8-3**  
**Roadway Capacities**

FACILITY TYPE	DAILY CAPACITY (AADT)	PEAK HOUR CAPACITY
4 – Lane Freeway	70,000	4,000
6 – Lane Divided Arterial	40,000	2,400
4 – Lane Divided Arterial	27,000	1,620
4 – Lane Undivided Arterial	24,000	1,440
2 – Lane Divided Arterial	15,000	900
2 – Lane Undivided Arterial	12,000	720
2 – Lane Undivided Collector	9,000	540

Source: City of Oroville General Plan, Circulation Element, 1995

### ***Local Street System***

As illustrated in Figure 4.8-1, the east-west roads in the Project area are Highway 162 (Oroville Dam Boulevard), Montgomery Street, Grand Avenue, Nelson Avenue, and Mitchell Avenue. Montgomery Street, a main thoroughfare, is the road with direct access to the Project site and the City of Oroville. Montgomery Street and Feather



River Boulevard recently had a 4 way, left turn protected, signalized intersection installed (Robert Bishop, pers. comm.).

The north-south roads in the Project vicinity are Feather River Boulevard, Table Mountain Boulevard, Washington Avenue, and Lincoln Street. Feather River Boulevard is an approximately 50-foot wide collector street, whereas the other north-south streets are arterials. Overweight and wide loads need to obtain applicable permits from Caltrans as well as from the City of Oroville.

The roadways in the Project vicinity are currently used by large trucks, and therefore all truck deliveries can be accommodated by the nearby Highways and Montgomery Street.

Western Pacific Railroad (owned by Union Pacific) has railroad tracks located approximately 1.1 miles to the east of the Project site. These tracks are used solely for commercial purposes, as Amtrak does not have a passenger stop in Oroville.

#### 4.8.2 Regulatory Considerations

The following regulations are applicable to the control of traffic and transportation as it relates to the Project site development.

##### ***Caltrans***

##### 49 CFR, Chapter 11, Subchapter C; and Chapter 111, Subchapter B

These authorities establish national standards for the transportation of hazardous materials (Chapter 11, Subchapter C), and national safety standards for the transport of goods and materials and substances over public highways (Chapter 111, Subchapter B, Parts 171-173, 177-178).

##### California Vehicle Code § 35780; California Streets & Highways Code §§ 117 and 660-711; 21 CCR 4§ 1411.1-1411.6

These state codes permit requirements for "overload" approvals (transportation permits) for transportation over state highways.

##### California Streets and Highways Code § 117, 660-711

This code requires permits for any construction, maintenance or repair involving encroachment on state highway rights-of-way.

*California Vehicle Code § 31300 et seq*

The code includes provisions for the transportation of hazardous materials on state highways.

*California Vehicle Code § 31030*

This Section identifies commercial shipping routes for specified waste streams.

*California Vehicle Code §§ 31600-31620*

These sections provide regulations for the transport of explosive materials.

*California Vehicle Code §§ 32100-32109*

These sections establish requirements for the transportation of inhalation hazards and poisonous gases.

*California Vehicle Code §§ 34000-34121*

This law establishes requirements for the transportation of flammable and combustible liquids over public roads and highways.

***Oroville General Plan***

The 1995 Oroville General Plan includes an analysis of existing and future traffic in the City of Oroville planning area. The analysis that the City uses for adequacy of intersections traffic impacts is Level of Service (LOS). The Initial Study, included as Appendix A, notes that LOS is not being evaluated in this EIR due to the potentially affected roadways being under capacity.

The Objective noted in the Circulation Element of the City of Oroville General Plan that is applicable to this Project includes:

- 5.20a.** Encourage safe and efficient vehicular movement throughout the Planning Area

*Public Transit*

Oroville is served by a variety of local and regional transit options. The policy direction for the transit system is provided by the Oroville City Council and the Butte County Board of Supervisors. The actual transit services are provided by a private operator, ATC/Vanco. Transit management, contract administration, and marketing of the Oroville Area Transit Systems (OATS) are provided by the Transportation Systems Specialist of the Butte County Department of Public Works. The two transit systems that primarily serve the City of Oroville are the Oroville Express and OATS. No transit

options in the City of Oroville directly service Riverbend Park. Figure 4.8-3 shows transit routes.

#### *Oroville Express*

The Oroville Express is a ticket-based dial-a-ride service for the elderly and the disabled. This system has been in operation in the Oroville Area since 1976. A majority of riders use the system for shopping, personal business or medical trips.

#### *OATS*

OATS is a fixed route bus with service available to the general public. The OATS route is 17.5 miles long and it runs from the Butte County Center to Las Plumas High School through Thermalito, Oroville and South Oroville. OATS uses flag stops in residential areas and signed stops in business districts. The most popular stops are:

- The Transit Center
- Oroville Hospital
- Las Plumas High School

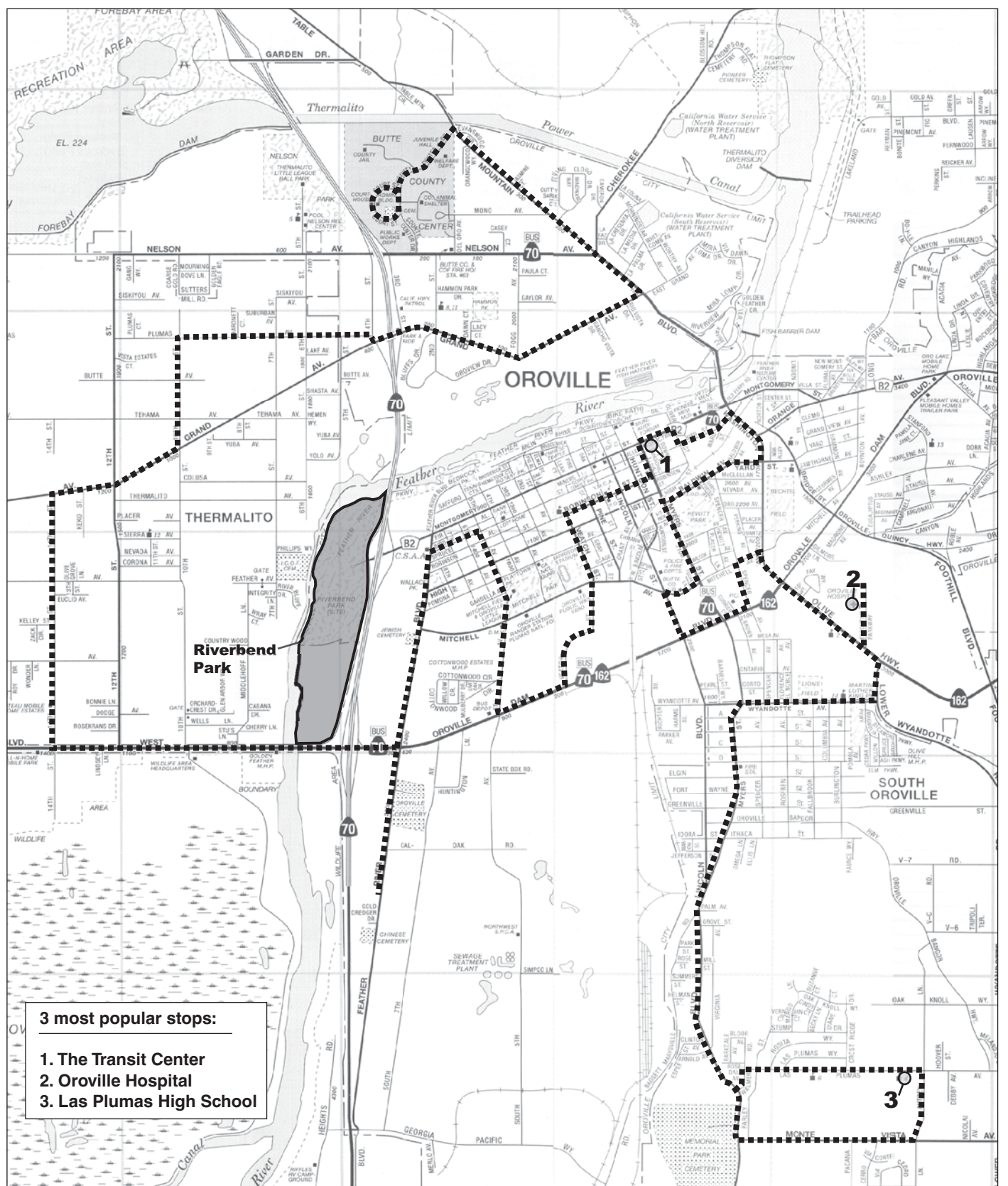
The Transit Center for OATS is located at Montgomery Street and Myers Street; this stop has a shelter. The Transit Center is also a transfer point for the Butte County Transit System. The OATS transit service does not service Riverbend Park, as the nearest stops are located along Feather River Boulevard and Bird Street. OATS buses are equipped with bike racks.

#### *Bicycle System*

The City of Oroville's bikeway system plays a critical role in enhancing Oroville's recreational opportunities. The overall system consists of the following components:

- Class I Bikeways: paved off-street bicycle paths or trails.
- Class II Bikeways: bicycle lanes designated on public roadways that are separated from automobile traffic by a lane marking on the street.
- Other trails: mostly off-street, unpaved, multi-use recreation trails that are appropriate for hikers, joggers and equestrians as well as bicyclists.

Bicycling in Oroville is encouraged because bicycles are clean, quiet, energy efficient and inexpensive forms of transportation that can be enjoyed by people of all ages.



Source: CSAA 2001 / EDAW, Inc. 2002

0.5 0 0.5 1.0 Miles



Approximate Scale  
1" = 0.5 mile

EDAW

# Riverbend Park Existing Oroville Area Transit System

Figure 4.8-3

Currently there is a Class I Bikeway that runs along the eastern edge of the Feather River for the length of the Project site. This bikeway extends both north and south of the site along the Feather River. In addition, a Class II Bikeway runs the length of Oroville Dam Boulevard (Highway 162) and another Class II Bikeway runs north-south east of and parallel to Highway 70. All of these bikeways are included in the “Bradford Freeman Bicycle Trail” system. The Project site is one of only a few intended or existing staging areas for the bicycle path in Oroville (see Figure 4.8-4 for existing bike trails). The Bradford Freeman Bicycle Trail extends from the Oroville Dam in the east to the western boundary of the Thermalito Afterbay to the west. This approximately 36 mile trail makes a loop around the Oroville community, and passes directly through Riverbend Park.

An overall goal for the bicycle system in the City of Oroville is expressed in the General Plan Objective 5.40a: “Provide a system of Class I and Class II bicycle paths and lanes and multi-use recreational trails throughout the Planning Area that will increase bicycle access to major facilities, shopping, schools, work centers, and points of interest, and will increase the utility of bicycles not only for recreation, but also as a viable mode of alternative transportation.”

For the creation of additional bike paths, Policy 5.40h of the Oroville General Plan states that bikeway alignments should be based on:

- whether the route minimizes potential for conflict with motor vehicles movement and parking;
- whether the route improves access to major facilities and destinations;
- whether the route links public parks and recreation areas and other public facilities;
- whether routes intersect with existing transit lines in support of multi-modal transportation; and
- whether areas are available for convenient and secure parking.

Policy 5.40i of the City of Oroville General Plan strives to reduce conflicts between bicycles and other vehicles by:

- designating on-street bike lanes;
- developing off-street bike paths;
- signing and marking the routes thoroughly;

- monitoring the success of the routes and devising a system to improve their utility, if necessary; and
- adhering to proper design and construction criteria and standards.

### ***Butte County General Plan***

The circulation element of the Butte County General Plan is a guide to managing and developing the future transportation and circulation system in the County. The Butte County transportation system is a basic support network for providing the mobility needed to sustain our social, economic, and recreational life. Presently, Butte County's arterial roads and highways generally have adequate capacity to accommodate existing traffic volumes (Butte County, 2000).

The following Goal and Objective in the Circulation Element of the Butte County General Plan is applicable to the Project:

**Goal 3.0:** Minimize the negative impacts of transportation in the County.

**Objective 5.1:** Support safety standards established by emergency and protective service agencies.

### **Public Transportation**

The public transportation that is applicable to Butte County as well as the Project area is the Oroville Express. This is described in the City of Oroville Transportation section.

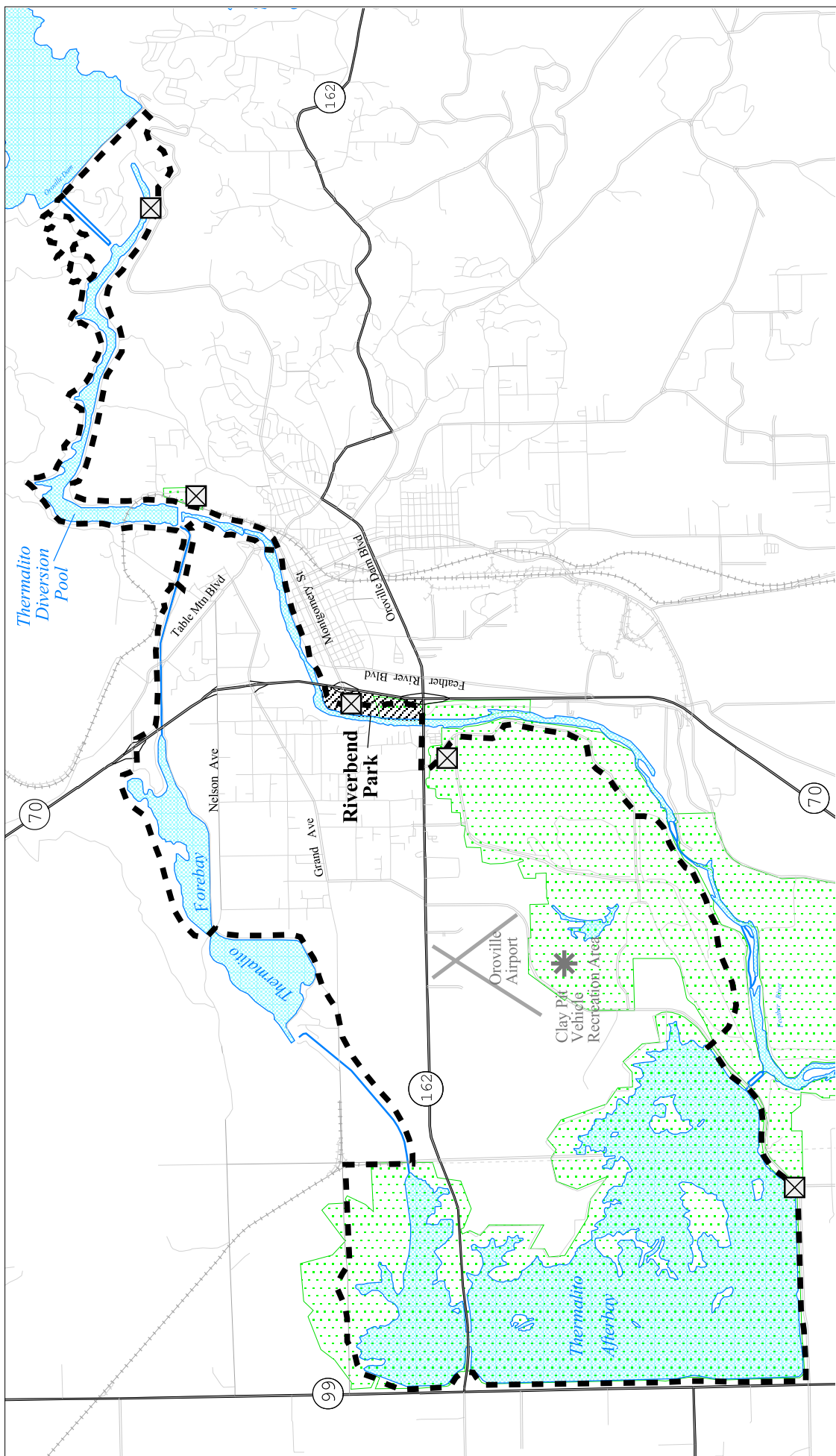
### **Bicycle System**

The Town of Paradise and the Cities of Oroville and Chico have recently completed bicycle plans. The description noted in the Bicycle System section of the City of Oroville discussion is most applicable to the Project site.

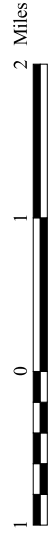
The following Butte County General Plan Goal and Objective is applicable to the Project:

**Goal 10:** Provide for a safe and convenient bicycle transportation system which is integrated with other transportation modes.

**Objective 10.1:** Provide for adequate bicycle circulation and facilities for recreation, as funding and planning opportunities allow.



Source: CA Spatial Data Library GIS / EDRAW, Inc. 2002



Scale 1 : 79,200  
1" = 1.25 miles



LEGEND

BikeTrail Route (approx 36 miles)  
"The Bradford Freeman Bicycle Trail"

Bicycle Staging Area  
(existing or proposed)

Oroville Wildlife Area

# Riverbend Park

## Existing Bicycle Trail System

EDAW  
6/11/02

Figure 4.8-4

### 4.8.3 Project Consistency with Applicable Regulations

#### *Caltrans*

All hazardous material shipments required for the construction of the Riverbend Park Project would obtain applicable permits prior to transport. Only permitted roadways would be used for construction vehicles, and if overload permits are required, they would be obtained prior to delivery.

#### *City of Oroville*

Estimates of existing traffic indicate that street operations in the City of Oroville are generally excellent (with the exception of Oroville Dam Boulevard). The Project roadway network has been carefully designed to ensure efficient travel through the Project site, which coincides with the City of Oroville's goal of encouraging safe and efficient vehicular traffic through the planning area. The majority of traffic associated with the Project would utilize regional access roadways, in particular, Highway 70 which is well below capacity.

#### *Public Transit*

There are currently no transit services in the City of Oroville that provide access to Riverbend Park. At this time, there are no planned expansions of service to provide access to Riverbend Park once the Project is completed. The City of Oroville would need to request or politically pressure OATS to provide a connection to Riverbend Park, which would most likely not occur until the Project is completed and usage figures are calculated.

#### *Bicycle System*

The Project would significantly enhance the amount of bicycling possibilities at Riverbend Park. This area could be used as more of a staging area for starting or ending long bike rides, as the Project is designed to connect, as well as expand, the existing paved bicycle path (the Bradford Freeman Bicycle Trail) which starts to the northeast, and continues to the south, along the Feather River. Day users to Riverbend Park would have the possibility to bike throughout the Project site on paved bicycle trails that form loops. Both Objective 5.40a and Policies 5.40h and 5.40i would be abided by with careful design of the proposed improvements at Riverbend Park.



### ***Butte County***

The circulation element of the Butte County General Plan is a guide to managing and developing the future transportation and circulation system in the County. The Project would not have a large effect on the overall County transportation circulation patterns. The main impacts would fall upon Highway 70, which is well below capacity. The layout of the internal circulation on the Project site would be designed with emergency vehicles size, length, and access requirements considered.

### ***Public Transit***

Public transit is not provided to Riverbend Park by any Butte County organization. There are no plans mentioned in the General Plan for the expansion of transit services to provide service to Riverbend Park.

### ***Bicycle System***

The bicycle trail system that dissects the Project site is maintained by the City of Oroville. However, the Project does comply with the applicable Butte County General Plan Goal and Objective. The improved bicycle trails provides for safe and convenient bike transportation in the new Riverbed Park which is designed for improved recreation opportunities.

### ***Alternative Modes of Transportation***

Development of the park would not conflict with adopted policies, plans, or programs supporting alternative transportation. The Project would encourage the use of other forms of transportation than the automobile by providing extensions to the existing bike trail and enhancing the pedestrian amenities at the site. There are currently no plans for OATS to provide service to the Project site.

## **4.8.4 Thresholds of Significance**

The Project would result in an impact to traffic and transportation if it would:

- Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.

- Result in inadequate parking capacity.
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

#### 4.8.5 Impacts and Mitigation Measures

##### *Less than Significant Impacts*

###### *1. Traffic Load - Local roadways*

During both the construction as well as operation phase, the Project would result in an increase in traffic in relation to existing traffic load and capacity. The Project would introduce new recreational and commercial uses onto the site that would generate vehicle trips. The approximately 20 new employees (17 FRRPD, 3 Chamber of Commerce, and 2-3 maintenance) at the Project site would work in the two new buildings and would utilize the parking lot which is directly south of the main entrance to the Park.

The relationship of Project-generated traffic to the local roadway network has not been determined on a Level of Service ranking. Based on the low overall number of available parking spaces (291), the Project would not be expected to affect the travel times or travel speeds along Highway 70 or the local roadways. Even with high usage at the Project site, the impact would be *less than significant*, due to the majority of the effects being on Highway 70, which, as previously mentioned, is operating far below capacity. Few surface streets would be affected.

Recreational visitation figures are hard to predict, yet based on visitation numbers for the Thermalito Forebay and other nearby recreation sites, Table 4.8-1 shows the predicted visitation numbers for Riverbend Park. The distribution of these visitors is shown as a percentage turn movement at each affected intersection, as shown in Table 4.8-2 (Greg Melton, pers. comm.).

**Table 4.8-4  
Riverbend Park Visitation Numbers**

DESCRIPTION	NUMBER OF VEHICLES	TIMEFRAME	TOTAL VEHICLES ENTERING OR LEAVING PER DAY
Average hourly visits: Week Day	35 / hr	7:00am-10:00am 3:30pm- 8:00pm	300
Average hourly visits: Weekend / Events	65 / hr	7:00am-10:00am 3:30pm- 8:00pm	535
Peak hourly visits: Weekday	45/ hr	6:30am- 7:30am 3:30pm- 5:30pm	450
Peak hourly visits: Weekend day/ Events	75/ hr	6:30am- 10:00am 4:00pm- 8:00pm	1,000

\*Source: Land Image/EDAW

**Table 4.8-5  
Trip Distribution**

HIGHWAY 70 N OR S % OF USE	HIGHWAY 162 % OF USE*	MONTGOMERY % OF USE
70%	20%	30%
75%	15%	25%
70%	20%	30%
75%	15%	25%

\* It is assumed that the percentage of vehicles using Highway 70 would be split equally, both north and south. Looking at the top line of Table 4.8-1, of the vehicles traveling south on Highway 70, 20% would use Highway 162, and the rest would continue south on Highway 70 (this is how first column relates to the second). These estimates are based on typical average uses.

Source: Land Image/EDAW, 2003

As noted in the Oroville General Plan, Oroville Dam Boulevard is the only roadway in the Project vicinity that is operating at below acceptable levels. This roadway is typically backed up, with extensive delays during the peak rush hours. The Project would add minor amounts of traffic to this highly traveled roadway, yet the majority of Project-generated traffic is assumed to use Highway 70, and would therefore represent a *less than significant* impact. The City of Oroville plans to address Oroville Dam Boulevard congestion in the near future. (Jo Sherman, pers. comm.)

## 2. Parking Capacity

Development of the Project would increase the on-site parking supply, with the creation of 291 parking spaces in seven designated parking areas. Development of the Recreation, Natural History, Chamber of Commerce and Concession Building, the

Ecology building, the improved boat launch ramp, and the new turf area are examples of developments accompanied by parking lots. The Project would slightly increase, as well as restrict to particular areas, the parking supply. The 291 new parking spaces are more than what is currently available at the main entrance, gravel parking lot (while other parking occurs unregulated throughout the Project site). Currently, there are approximately 268 total parking spaces throughout the Project site. (Greg Melton, pers. comm.)

The amount of parking was determined by the Dangermond Group in their “Program for Riverbend Park” document for the FRRPD in May 2002 (see Appendix C). This document takes into account the type and size of the developments that are to occur at Riverbend Park, and correlates that information with the amount of parking that is required for each specific development. Slight changes have been made to the Dangermond Group document based on changes that have occurred to the Project Description. The formulas for the amount of parking spaces per square foot, or the amount of spaces per recreation opportunity, were retained in the figures that are noted in this EIR.

The amount of parking that is associated with the Project has been designed for the amount of development that is planned for Riverbend Park. Since there would not be a shortage in parking at the Project site, a *less than significant* impact would result.

### 3. Air Traffic

The Project would not affect air traffic patterns. Project impacts would occur on the ground and the Oroville Municipal Airport, located less than 2 miles away, would not be adversely affected by this development. No Project structure would need a conditional use permit to build higher than what is allowed by the City of Oroville and Butte County zoning ordinances. The position of the Project site directly to the east of the bluff on the west side of Feather River further reduces any possible impact on air traffic patterns associated with the Oroville Airport. For the above mentioned reasons, development on the Project site would cause a *less than significant* impact on potential air traffic hazards.

### 4. Hazards

A sharp curve at the southern bend of Salmon Run Road represents a potential safety hazard. The Project has been designed to lessen the impact of the sharp curve (see figure 3-3). A “yield” sign would be used to inform drivers of the possible danger. A designated 6-8 foot bike lane would be located adjacent to Salmon Run Road to allow for safe bike and vehicle travel along this newly paved main route. The Project would represent a *less than significant* impact due to no substantial increase in hazards.

Paving Salmon Run Road greatly reduces the potential for vehicle accidents, due to removing high amounts of dust that are currently produced from the dirt road. (Greg Melton, pers. comm.)

***No Impact***

***1. Emergency Access***

Emergency access would be improved through development of the Project site. The new, paved access roads could be used by emergency vehicles to access the Project site, as well as the recently developed Oroville Wildlife Fishing Ponds Park directly to the south. There are two turnarounds on the Project site that are specifically designed for emergency vehicle use. Given that the Project would improve emergency access; this is considered to have ***no impact*** on the City of Oroville or Butte County.

## 4.9 AIR QUALITY

### 4.9.1 Environmental Setting

The Project site is located within the Northern Sacramento Valley Air Basin (NSVAB). The NSVAB is comprised of the seven counties: Shasta, Tehama, Glenn, Butte, Colusa, Sutter, and Yuba. The NSVAB is bounded to the north and west by the Coastal Mountain Ranges, to the east by the southern portion of the Cascade Mountain Range and the northern portion of the Sierra Nevada Mountains. Average elevations of these mountain ranges exceed 6,000 feet. The Project site is within the jurisdiction of the Butte County Air Quality Management District.

Airflow patterns within the NSVAB can generally be characterized by one of eight directional types. Of these eight airflow types, breezes originating in the southern portion of the valley dominate the wind flow in spring and summer months. These breezes can transport pollution from the Broader Sacramento Area (BSA) and from the San Francisco Bay Area Air Basin to the NVSAB (BCAQMD). During fall and winter months, winds in the NSVAB are generally calm with northerly or southerly wind flow patterns occasionally dominating during the mid-day hours (BCAQMD). The average mean hourly wind speed in the NSVAB is ten miles per hour.

The concentration of air pollutants in the NSVAB varies from day to day depending on the ability of the atmosphere to disperse pollutants. Air flow and pollutant transport within the air basin is complex and largely influenced by surrounding topographic features. In general, the surrounding mountain ranges hinder air flow into and out of the Valley. The basin's weak air flow often becomes blocked vertically by high barometric pressure over the valley and renders the air basin susceptible to pollutant accumulation over time. Most of the surrounding mountains are above the normal height of summer inversion layers (1,500 to 3,000 feet). Local climatological effects, including wind speed and direction, temperature, inversion layers, and precipitation and fog, can exacerbate air quality problems throughout the basin.

#### *Local Climate*

Climate in the NSVAB is typically characterized by high temperatures and low humidity during summer months and by occasional rainstorms with intermittent stagnant and foggy weather during winter months. Annual precipitation within the region averages almost 26 inches with most rainfall occurring between the months of October and May.

Temperatures within the Project area range from a daily average low of 35 degrees Fahrenheit in January to a daily average high of 94 degrees in July. Summer temperatures range from a daytime average temperature of approximately 90 degrees to a nighttime average temperature of approximately 50 degrees Fahrenheit. During winter daytime temperatures average approximately 55 degrees Fahrenheit and nighttime temperatures average approximately 35 degrees. Temperatures in the basin rarely fall below freezing (32 degrees Fahrenheit) (NOAA 1).

Due to the prevailing wind patterns, some of Butte County's summer air quality problems are a result of pollutants being transported from sources outside the basin, including the Sacramento Metropolitan area and San Francisco Bay area. Major air quality problems throughout the area occur from late spring through early winter. High ozone levels are a recurring problem from May to October due to the region's intense heat and sunlight. High pollutant concentrations also occur from October through January due to frequent strong temperature inversions, which trap pollutants near the earth's surface. In addition, the presence of visibility-reducing particulates caused largely by dust from spring winds and agricultural operations can be a problem throughout the year.

### ***Meteorological Influences on Air Quality***

Regional wind flow patterns have an effect on air quality patterns by directing pollutants downwind of sources. Localized meteorological conditions, such as moderate wind, disperse pollutants and reduce pollutant concentrations. On the contrary, inversion layers produced when a warm layer of air traps cooler air close to the ground especially hamper dispersion by creating a ceiling over the area and trapping air pollutants near the ground. Inversion layers are common over the Project area during summer mornings and afternoons. The combination of inversion layers and summer's longer daylight hours and plentiful sunshine provides the energy needed to fuel photochemical reactions between nitrogen oxides (NO<sub>x</sub>) and reactive organic gases (ROG) and results in ground level ozone (O<sub>3</sub>) formation.

In the winter, temperature inversions are common during night and early morning hours but frequently dissipate by afternoon. During these months, the greatest pollution problems are from carbon monoxide and NO<sub>x</sub>. In particular, high carbon monoxide concentrations occur on cold winter mornings with strong surface inversions and light winds.

### ***Sensitive Receptors***

Those specific population groups that are most sensitive to the adverse health effects of environmental factors such as air pollution, as well as the land uses where they would reside for long periods, are known as “sensitive receptors” and are protected from environmental health risks more diligently than the general public. Commonly identified sensitive population groups include children, the elderly, the acutely ill, and the chronically ill; and commonly identified sensitive land uses include residences, schools, playgrounds, childcare centers, retirement homes or convalescent homes, hospitals, and clinics.

Implementation of projects in the vicinity of sensitive receptors is subject to closer critique regarding potential adverse effects on air quality due to the increased degree of impact such effects would have on the sensitive receptors. There is a residential community directly across the river from the Project area, and there are two schools, three parks, and one hospital located within one mile of the Project area. However, emissions associated with the Project development are minor and would not expose sensitive receptors to increased health risks. Thus, implementation of the Project would have no impact on sensitive receptors.

## **4.9.2 Air Quality Monitoring**

### ***Criteria Air Pollutants***

Currently, most efforts to improve air quality in the United States and California is directed toward controlling five “criteria” pollutants: photochemical oxidants (ozone), carbon monoxide (CO), fine particulate matter (PM<sub>10</sub>), nitrogen dioxide (NO<sub>2</sub>), and sulfur dioxide (SO<sub>2</sub>). Fifteen years ago, suspended particulate lead was included as a criteria pollutant, but the widespread availability and use of unleaded gasoline has effectively eliminated lead as an air quality concern. Criteria pollutants are discussed below, along with their formation and health effects.

#### ***Ozone (O<sub>3</sub>)***

O<sub>3</sub> is a colorless gas with a pungent odor that causes eye irritation and respiratory function impairment. Most O<sub>3</sub> in the atmosphere is formed as a result of the interaction of ultraviolet light, ROG, and NO<sub>x</sub>. ROG is composed of non-methane hydrocarbons, and NO<sub>x</sub> is made of different chemical combinations of nitrogen and oxygen, mainly nitrogen oxide and nitrogen dioxide (NO<sub>2</sub>). Motor vehicles are the primary source of ROG and NO<sub>x</sub>. Because these photochemical reactions occur on a regional scale, O<sub>3</sub> is considered a regional pollutant.



#### *Fine Particulate Matter (PM<sub>10</sub>)*

PM<sub>10</sub> are atmospheric particles resulting from fume-producing industrial and agricultural operations, and natural activities. Health impacts from breathing the particulates resulted in revision of the Total Suspended Particulate (TSP) standard to reflect particulates that are small enough to be inhaled (i.e., 10 microns or less in size). Current standards define acceptable concentrations of particulates that are smaller than 10 microns in diameter, referred to as PM<sub>10</sub>. PM<sub>10</sub> includes a wide range of solid and liquid particles, including smoke, dust, aerosols, sulfates, and nitrates, which can cause lung damage.

#### *Carbon Monoxide (CO)*

CO is an odorless, colorless, gas that causes a number of health problems including fatigue, headache, confusion, and dizziness. The incomplete combustion of petroleum fuels in on-road vehicles is a major cause of CO. CO tends to dissipate rapidly into the atmosphere; consequently, violations of the CO standards are generally limited to major intersections during peak hour traffic conditions. CO is also produced during the winter from wood stoves and fireplaces.

#### *Nitrogen Dioxide (NO<sub>2</sub>)*

NO<sub>2</sub> is an indirect product of fuel combustion in industrial sources, motor vehicles, and other mobile sources (e.g., off-road vehicles, trains, aircraft, mobile equipment, and utility equipment). NO<sub>2</sub> causes a number of health problems including risk of acute and chronic respiratory disease.

#### *Sulfur Dioxide (SO<sub>2</sub>)*

SO<sub>2</sub> is a colorless gas with a pungent, irritating odor. The major source of SO<sub>2</sub> emissions is fuel-burning equipment in which fuel oil and/or coal are consumed. SO<sub>2</sub> causes a number of health problems including aggravation of chronic obstructive lung disease.

### ***Existing Air Quality Monitoring Data***

Air pollutant concentrations are measured at monitoring stations throughout the air basin. Baseline air quality in the study area can be inferred from ambient air quality measurements conducted at the Chico-Manzanita Avenue monitoring station, the closest monitoring station to the Project site that is generally representative of the air quality in the Project area. Table 4.9-1 summarizes the last 3 years of published data from this monitoring station, which records ozone, nitrogen dioxide, carbon monoxide, and particulate matter concentrations. Because CO is considered a ‘localized’ rather than ‘regional’ pollutant of concern, ambient CO monitoring data from the Chico-

Manzanita monitoring station is not considered accurately representative of the Project area. Given the regions attainment designation for State and Federal CO standards and the relatively low measured ambient concentrations in the more urbanized areas of the region, background CO concentrations in the Project area are not anticipated to exceed State or Federal standards.

As shown in Table 4.9-1, the California and national ambient air quality standards for ozone, as well as the State PM<sub>10</sub> standard and the recently established Federal PM<sub>2.5</sub> standard, have been exceeded on numerous occasions over the last three years. Based on the monitoring data obtained, the air pollutants of primary concern within the Project area include ozone precursors (i.e., ROG and NO<sub>x</sub>) and airborne particulates.

### ***Existing Attainment Status***

Criteria air pollutants are classified in each air basin, county, or in some cases in a specific urbanized area, according to the applicable standards. For each area, criteria pollutants meeting a given standard are classified as in attainment of that standard, and pollutants whose concentrations exceed a given standard are classified as nonattainment. In the case that data are insufficient to determine whether or not the standard has been exceeded, the area is designated "unclassified."

Butte County is currently designated as nonattainment for the State ozone and PM<sub>10</sub> standards and transitional-nonattainment for the Federal 1-hour ozone standard, and is currently either unclassified or in attainment for the remaining Federal and State air pollution standards. At this time, the attainment designation for the recently established 8-hour ozone and PM<sub>2.5</sub> standards have not been determined (ARB 2002).

**Table 4.9-1**  
**Summary of Annual Air Quality Monitoring Data**  
**Chico-Manzanita Avenue Monitoring Station**

	1999	2000	2001	2002
<b>OZONE (O<sub>3</sub>):</b> <i>State Standard (1-hr avg, 0.09 ppm); National Standard (1-hr avg, 0.12 ppm; 8-hr avg, 0.08 ppm)</i>				
Maximum Concentration (1-hour/8-hour)	0.135/0.100	0.096/0.083	0.098/0.087	0.100/0.079
Number of Days State Standard Exceeded	7	1	1	2
Number of Days National Standards Exceeded (1-hour/ 8-hour)	1/5	0/0	0/2	0/0
<b>NITROGEN DIOXIDE (NO<sub>2</sub>):</b> <i>State Standard (1-hr avg, 0.25 ppm); National Standard (0.053 ppm AAM)</i>				
Maximum Concentration	0.077	0.078	0.062	.058
Annual Mean	0.015	0.013	.012	.012
Number of Days State Standard Exceeded	0	0	0	0
Number of Days National Standard Exceeded	0	0	0	0
<b>CARBON MONOXIDE (CO):</b> <i>State Standard (1-hr/8-hr avg, 20/9.1 ppm); National Standard (1-hr/8-hr avg, 35/9.5 ppm)</i>				
Maximum Concentration (1-hr/8-hr)	NA/5.41	NA/4.03	NA/4.26	NA/3.49
Number of Days State Standard Exceeded	0	0	0	0
Number of Days National Standard Exceeded	0	0	0	0
<b>SUSPENDED PARTICULATES (PM<sub>10</sub>):</b> <i>State Standard (24-hr avg, 50µg/m<sup>3</sup>); National Standard (24-hr avg, 150µg/m<sup>3</sup>)</i>				
Maximum Daily Concentration	95.0	81.0	105.0	92.0
Days Exceeding State/National Standards – Measured	7/0	9/0	4/0	3/0
Days Exceeding State/National Standards – Calculated	42/0	45/0	24/0	18/0
<b>SUSPENDED PARTICULATES (PM<sub>2.5</sub>):</b> <i>No State Standard; National Standards (24-hr avg./ AAM, 65µg/m<sup>3</sup>/15µg/m<sup>3</sup>)</i>				
Maximum Concentration	73.0	98.0	65.0	45.0
Days Exceeding 24-hour/Annual Standard	NA/1	NA/2	NA/0	NA/0

Note: Measured days are those days that an actual measurement was greater than the level of the State or Federal standard. Measurements are typically collected every six days. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

ppm = parts per million

AAM = annual arithmetic mean

µg/m<sup>3</sup> = micrograms per cubic meter

NA = not available

Source: California Air Resources Board, 2001.

### 4.9.3 Regulatory Considerations

Air quality in the Project vicinity is regulated by several jurisdictions including the Butte County Air Quality Management District (BCAQMD), the California Air Resources Board (CARB), and the U.S. Environmental Protection Agency (EPA). In addition, the City of Oroville and Butte County General Plans include guidelines regarding protection of air quality in their respective planning areas. Each of these jurisdictions develops rules, regulations, and/or policies, to attain its air quality goals and the directives and

standards imposed upon it through State and Federal legislation. Although EPA regulations may not be superseded, both State and local regulations may be more stringent.

Pollutants subject to federal ambient standards are referred to as "criteria" pollutants because the EPA publishes criteria documents to justify the choice of standards. Air quality standards are designed for the protection of public health, with a focus on the protection of sensitive receptors. Federal and State standards for the criteria pollutants and other State regulated air pollutants are shown in Table 4.9-2.

### ***Federal Regulations***

The Federal Clean Air Act (CAA) of 1970 required the EPA to set National Ambient Air Quality Standards (NAAQS) for several air pollutants on the basis of human health and welfare criteria. The CAA also set deadlines for the attainment of these standards. The CAA Amendments of 1990 (CAAA) made major changes in deadlines for attaining NAAQS and in the actions required of areas that exceeded these standards.

The CAA requires an air quality control plan referred to as the State Implementation Plan (SIP), which must contain the strategies and control measures that the State will use to attain the NAAQS. In addition, the CAAA of 1990 require states containing areas that violate the NAAQS, such as the NSVAB, to revise their SIPs to incorporate additional control measures to further reduce air pollutant concentrations. If when reviewing the SIP for conformity with CAAA mandates, the EPA determines a SIP to be inadequate, it may prepare a Federal Implementation Plan (FIP) for the nonattainment area and may impose additional control measures.

### ***California Clean Air Act***

The California Clean Air Act of 1988 (CCAA) requires that all air districts in the State endeavor to achieve and maintain California Ambient Air Quality Standards (CAAQS) for O<sub>3</sub>, CO, SO<sub>2</sub> and NO<sub>2</sub>. The CCAA requires air districts that exceed State standards to prepare plans showing how they would meet these standards. The CCAA specifies that districts focus particular attention on reducing the emissions from transportation and area-wide emission sources, and the act provides districts with additional authority to regulate indirect sources. Each district plan is to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. If this proves impossible, the plans must include "all feasible measures" to achieve emission reductions. The CCAA requires that the plans be updated every three years.

**Table 4.9-2**  
**Ambient Air Quality Standards**

California <sup>a</sup>		Federal <sup>b</sup>	
AIR POLLUTANT	CONCENTRATION	PRIMARY (>)	SECONDARY (>)
Ozone	0.09 ppm, 1-hr avg	0.12 ppm, 1-hr avg 0.08 ppm, 8-hr avg. <sup>c</sup>	0.12 ppm, 1-hr avg 0.08 ppm, 8-hr avg. <sup>c</sup>
Carbon Monoxide	9 ppm, 8-hr avg	9 ppm, 8-hr avg	9 ppm, 8-hr avg
	20 ppm, 1-hr avg	35 ppm, 1-hr avg	35 ppm, 1-hr avg
Nitrogen Dioxide	0.25 ppm, 1-hr avg	100 µg/m <sup>3</sup> annual	100 µg/m <sup>3</sup> annual
Sulfur Dioxide	0.04 ppm, 24-hr avg	0.03 ppm, annual avg	0.5 ppm, 3-hr avg
	0.25 ppm, 1-hr avg	0.14 ppm, 24-hr avg	
Suspended Particulate Matter (PM <sub>10</sub> )	30 µg/m <sup>3</sup> annual geometric mean	50 µg/m <sup>3</sup> annual arithmetic mean	50 µg/m <sup>3</sup> annual arithmetic mean
	50 µg/m <sup>3</sup> , 24-hr avg	150 µg/m <sup>3</sup> , 24-hr avg	150 µg/m <sup>3</sup> , 24-hr avg
Suspended Particulate Matter (PM <sub>2.5</sub> ) <sup>c</sup>	—	15 µg/m <sup>3</sup> annual arithmetic mean	15 µg/m <sup>3</sup> annual arithmetic mean
		65 µg/m <sup>3</sup> , 24-hr avg	65 µg/m <sup>3</sup> , 24-hr avg
Lead	1.5 µg/m <sup>3</sup> ,	1.5 µg/m <sup>3</sup>	1.5 µg/m <sup>3</sup>
	30-day avg	calendar quarter	calendar quarter
Sulfates	25 µg/m <sup>3</sup> , 24-hr avg	—	—
Hydrogen Sulfide	0.03 ppm, 1-hr avg	—	—
Vinyl Chloride	0.01 ppm, 24-hr avg	—	—
Visibility Reducing Particles	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.	—	—

a California standards for ozone, carbon monoxide, sulfur dioxide (1-hour), suspended particulate matter-PM10 visibility reducing particles, are values that are not to be exceeded. The sulfur dioxide (24-hour), sulfates, lead, hydrogen sulfide, and vinyl chloride standards are not to be equaled or exceeded.

b Federal standards, other than ozone and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

c Based on newly established 8-hour ozone and PM-2.5 EPA standards. The 0.12 ppm 1-hour ozone standard will not be revoked in a given area until that area has achieved 3 consecutive years of air quality data meeting the 1-hour standard.

ppm parts per million by volume

µg/m<sup>3</sup> micrograms per cubic meter

Source: California Air Resources Board, 2002.

### ***Air Quality Attainment Plans***

The CCAA also requires that nonattainment districts that are either receptors or contributors of air pollutants transported to or from other areas prepare and submit an attainment plan. As previously mentioned, the CCAA requires that the plan be designed to achieve a reduction in district-wide emissions of five percent or more per year for each non-attainment pollutant or its precursors, averaged every consecutive 3-year period.

The 2000 Air Quality Attainment Plan (2000 AQAP) for the NSVAB identifies those portions of the basin designated as nonattainment for the State ambient air quality standards, discusses health effects related to the various air pollutants, addresses the progress made in implementing the 1991, 1994, and 1997 AQAPs, and proposes modifications to the strategies necessary to attain air quality standards throughout the basin. Like previous plans, the 2000 AQAP focuses on adoption and implementation of control measures for stationary sources, area wide sources, and indirect sources, while also addressing public education and information programs. In addition, the 2000 AQAP emphasizes successful implementation of the control strategies detailed by the California Air Resources Board's 1997 State Implementation Plan for ozone.

### ***Butte County General Plan***

The Land Use Element of the Butte County General Plan describes air quality in the county to be relatively good in valley areas and excellent in mountain areas. As mentioned above, concentrations of carbon monoxide, particulate matter, and ozone (photochemical oxidants) in the county occasionally exceed standards, primarily due to entrapment of air pollutants during temperature inversions. The Land Use Element states that “the relatively high quality of air resources which has attracted people to Butte County is gradually being affected by the growth.”

In order to maintain air quality in the County and the region and in response to the Clean Air Act Amendments of 1977, the Butte County Association of Governments (BCAG) has prepared an Air Quality Implementation Plan for attainment of Federal ambient air standards. In addition, the effects of development on air quality are included in zoning factors and development criteria used by the County.

In addition to the Land Use Element, the Circulation and Conservation Elements of the General Plan also include objectives and policies designed to maintain and improve the County's air quality. The General Plan includes the following policies regarding air quality in the County:

- 2.5a** Evaluate carefully the air pollution potential of all development plans and proposals.
- 3.1** Plan for transportation modes and strategies that ensure good air quality, reduce noise, reduce petroleum consumption, reduce the need to devote additional lands to transportation uses, and lessen the dangers presented by transportation of hazardous materials.
- 3.1.1** The County will support continued implementation of the State motor vehicle emissions control program as part of the effort to meet and maintain federal air quality standards.
- 14.1.2** The County will cooperate with the City of Chico and the Air Pollution Control District in efforts to reduce traffic related carbon monoxide below levels which violate national ambient air quality standards in the Chico urban area.

### ***City of Oroville General Plan***

The Open Space, Natural Resources, and Conservation Element of the City of Oroville General Plan details the existing air quality, air quality monitoring, and air quality issues in the Oroville area and throughout Butte County. These Elements discuss both the non-attainment status of the area, and the major sources contributing to air pollution, primarily consisting of combustion processes such as motor vehicles and agricultural burning. The Open Space, Natural Resources, and Conservation Element includes several air quality objectives and policies, listed below:

- 6.16a** Strive to meet all State and Federal ambient air quality standards
- 6.16b** Cooperate with the Butte County Air Pollution Control District to achieve the five percent annual emissions reductions for nonattainment pollutants, including ozone and particulate matter, by implementation of air pollution control measures as required by State and Federal Standards.

*The Northern Sacramento Air Basin's 1991 Air Quality Attainment Plan is written with the intention of attaining State standards at the earliest practicable date. Although the Plan does not demonstrate a five percent reduction of all pollutant levels, it does include every feasible control measure, and a schedule of adoption of the control measures. Control measures include a new Source Review Rule, Indirect Source Review, and Transportation Control Measures. The Attainment Plan does not directly address new Federal planning*

*requirements; since the Plan is anticipated to eventually result in the attainment of compliance with the more rigorous State ambient air quality standards, Federal requirements are expected to be met as well. The district is required to update the Plan every three years.*

- 6.16c** Cooperate with the Butte County Air Pollution Control District to implement public education measures outlined in the 1991 Air Quality Attainment Plan.

*Measures are divided into three categories, including community contact, education, and public information. Community contact measures include the occurrence of community events that promote clean air, such as participating in Rideshare Week/Rideshare Fair displays, public presentations for interested community organizations and schools, and public workshops to present proposed strategies and programs. Educational programs include the continued development of multimedia presentations and public displays, development and dissemination of public information materials, and development and advertising and promotion spots. Public information programs include continued development of local media relations, involvement of the community in brainstorming workshops to develop regulations and strategies, coordination with and provision of information to local organizations and schools, and development and coordination of an Advisory Program with local schools and media for health alert advisory episodes.*

- 6.16d** Support planning measures in the Sacramento area that would result in a net decrease in production of ozone precursors and other wind-transported pollutants that ultimately affect air quality in the Oroville Planning Area.

*The City has little opportunity to address the pollutant transfer issue in an active manner, although it may submit comments in support of or protesting proposed projects in the region during the environmental review process.*

- 6.16e** Encourage the use of transit facilities, carpooling, and other alternatives to the car throughout the planning area.

*Increased use of transit and carpooling can lead to a decrease in daily trips, less emissions, and improved air quality.*

#### **4.9.4 Project Consistency with Applicable Regulations**

The Project does not include any features that would contradict or obstruct implementation of Federal or State air quality regulations, policies, or guidelines as detailed in the CAA, CAAA, or CCAA, nor would the Project conflict with air quality guidelines set by Butte County or the City of Oroville. In addition, the Project would



not contradict or obstruct implementation of the measures established in the basin's 1991, 1994, or 1997 AQAP, the 1997 State Implementation Plan, or the basin's 2000 AQAP. Though the Project area is currently in nonattainment of ozone and PM-10 standards and the Project would include minor increases in ozone, ozone precursors, and PM-10 in the Project area, the Project is still consistent with all applicable policies, guidelines, and regulations.

#### **4.9.5 Thresholds of Significance**

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to determine the level of significance of air quality impacts. The Project would have a significant impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)
- Expose sensitive receptors to substantial pollutant concentrations
- Create objectionable odors affecting a substantial number of people

#### **4.9.6 Impacts and Mitigation Measures**

The Project involves the construction of a variety of infrastructure, parking, trails, and structures to serve the various park and recreational uses. The Project, however, would not include the addition of any major stationary or mobile source of air pollutant emissions to the area. The new structures would present a minor source of heating- and concessions-related emissions, while vehicle-related emissions in the Project area would increase with the attraction of park users to the area. In addition, construction-related emissions would present a temporary source of emissions. The significance of these impacts is discussed below.

### ***Less than Significant Impacts***

#### ***1. Air Quality Degradation***

Though construction and grading activities have the potential to produce significant impacts on air quality by generating significant dust and particulate matter and emitting significant amounts of pollutants from heavy equipment, implementation of Best Management Practices for air quality, as detailed in Section 3.5, would reduce the potential for degradation of air quality to less than significant. As no other component of the Project presents the potential for significant degradation of air quality, any impacts to air quality associated with the Project would be ***less than significant***.

#### ***2. Application of Air Quality Plans***

The Project area lies in a region that is currently in non-attainment of standards for ozone and PM-10. The Project would generate air pollutants during construction, but construction activities would not conflict with or obstruct implementation of the AQAP for the NSVAB. Implementation of the Project and the Civic Park Master Plan would expand existing public and recreational uses in the area, but as the park would be a local, rather than regional, facility with no large-scale commercial or residential facilities, no significant source of emissions or population growth would be introduced to the area. Because the facilities would be small in scale, not growth inducing, and would have only minor emissions, they do not conflict with or obstruct the implementation of any applicable air quality control plans. Any impacts resulting from conflict with implementation of applicable air quality plans would therefore be ***less than significant***.

#### ***3. Violation of or Significant Contribution to Violation of Air Quality Standards***

The increased traffic accessing the site and the increase in vehicles idling while launching and retrieving boats would increase the vehicle-related air emissions in the Project area. Because the dominant air quality issues in the Project area, including those impacted by vehicle-related emissions, are regional issues and because the increase in vehicle miles and idling time in the Project area is negligible in the local and regional context, impacts associated with increased vehicle access to the site would be ***less than significant***.

In addition, construction of the Project would temporarily increase air emissions and generation of dust in the area from construction equipment and from construction and grading activities. Though these emissions would be temporary and are expected to be less than significant, implementation of Best Management Practices and standard dust abatement efforts during construction, as detailed in Section 3.5, would further ensure that construction-related air quality impacts would be reduced to ***less than significant***.

4. Cumulatively Considerable Net Increase in Emissions of a Non-Attainment Criteria Pollutant

As discussed, the increase in emissions of ozone, ozone precursors, and particulate matter associated with Project implementation would be minor. In addition to being less than significant, the increase in emissions would not constitute a cumulatively considerable net increase in emissions in the context of existing sources of ozone and particulate matter, nor in the context of reasonably foreseeable future projects. Impacts resulting from a cumulatively considerable net increase in ozone, ozone precursor, or particulate matter emissions would therefore be ***less than significant***.

5. Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

As there are no sensitive receptors in the vicinity of the Project area and the minor increase in emissions would neither result in a substantial nor cumulatively considerable contribution to regional emissions, any impact to sensitive receptors associated with the Project would be ***less than significant***.

6. Objectionable Odors

No objectionable odors are expected to result from the construction or operation of Project land uses. Land uses would include park and recreational uses and community facility uses, which are not associated with objectionable odors. Any possible objectionable odors associated with construction activities, such as odors from engine emissions or paving activities, would be minor and temporary and would not affect a substantial number of people. Impacts resulting from the creation of objectionable odors would therefore be ***less than significant***.

## 4.10 NOISE

### 4.10.1 Environmental Setting

#### *Acoustic Fundamentals*

##### Noise Descriptors

Community noise levels are typically measured in terms of the A-weighted decibel (dBA). A-weighting is a frequency correction that correlates overall sound pressure levels with the frequency response of the human ear. Additional units of measurement have been developed to evaluate the long-term characteristics of sound. The equivalent energy (Leq) noise descriptor is commonly used to represent the steady state sound level that corresponds to the same total energy as a time-varying signal measured over a given period of time. In addition, the Day-Night Averaged Level (Ldn) and the Community Noise Equivalent Level (CNEL) are commonly used to represent a time-weighted average of all measured noise levels that occur over a 24-hour period. “Time-weighting” of noise measurements adjusts measurements such that noise occurring during the more noise-sensitive evening and nighttime hours is weighted more heavily. Both the Ldn and CNEL scales include a 10 dBA “penalty,” or weighting, added for nighttime noise (10:00 p.m. to 7:00 a.m.) to account for the greater sensitivity to noise during this period. The CNEL is similar to the Ldn, but adds an additional 5 dBA penalty to evening noise (7:00 p.m. to 10:00 p.m.). The CNEL is the most widely used noise descriptor in California, and is therefore used for the arterial/highway traffic generated noise assessment in this report.

##### Characteristics of Sound Propagation and Attenuation

Noise can be generated by a number of sources, including mobile sources such as automobiles, trucks, and airplanes and stationary sources such as construction sites, machinery, and industrial operations. Noise generated by mobile sources typically attenuates at a rate between 3.0 to 4.5 dBA per doubling of distance depending on the ground surface and the number and type of objects between the noise source and the receiver. Hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3.0 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance. Noise generated by stationary sources typically attenuates at a much greater rate typically between 6.0 to 7.5 dBA per doubling of distance.

Placing barriers between the noise source and the receiver can reduce sound levels. In general, barriers contribute to decreasing noise levels only when the structure breaks the line of sight between the source and the receiver. Buildings, concrete walls, and berms

can all act as effective noise barriers. Wooden fences or broad areas of dense foliage, though less effective than solid barriers, can also reduce noise.

#### *Human Response to Noise*

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage such as hearing impairment, but rather in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with normal human activities, including sleep, speech, recreation, and tasks demanding concentration or coordination. Hearing loss can occur at the highest noise intensity levels. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases. The acceptability of noise and a noise's threat to public well-being are the basis for land use planning policies preventing exposure to excessive community noise levels.

#### *Community Ambient Noise Degradation*

In addition to the noise characteristics discussed above, the degradation of the existing noise environment constitutes another consideration in defining the criteria on which noise impact assessment is based. In community noise assessments, it is “generally not significant” if no noise-sensitive sites are located in the Project area, if increases in community noise level with the implementation of the Project are expected to be 3 dBA or less at noise-sensitive locations, and if the Project would not result in violations of local ordinances or standards. Noise-sensitive sites include residences, motels, hotels, public meeting rooms, auditoriums, schools, churches, libraries, hospitals, amphitheaters, parks, and other areas where quiet is essential.

#### ***Existing Noise Environment***

The major noise sources in and around the Project area include vehicular traffic on area roadways and aircraft flyovers from the nearby airports. Noise-sensitive land uses located along the Feather River corridor and in the vicinity of Riverbend Park consist primarily of single residential dwellings, the nearest of which are located west of the park, across the Feather River. There are no other noise sensitive land uses within 0.5 miles of the Project area, but there exists one hospital, two schools, three parks, and a number of other residences within one mile of the area.

*Ambient Noise Survey*

To document existing noise conditions, four short-term (15-minute) daytime samples were taken in the vicinity of the Project site. The ambient noise surveys were performed on April 20, 2002. The noise monitoring data obtained during these surveys are summarized in Table 4.10-1. The table displays the minimum ( $L_{min}$ ), maximum ( $L_{max}$ ), and average equivalent ( $L_{eq}$ ) sound levels measured during the survey.

Average daytime noise levels in the vicinity of the Project area vary considerably depending primarily on distance from nearby roadways. Based on the noise surveys conducted, average ambient noise levels in the Project area range from approximately 50 to more than 55 dBA  $L_{eq}$ . Maximum intermittent noise levels ranged from approximately 56 to 62 dBA  $L_{max}$ . Noise measurements taken in the vicinity of residential dwellings located at the intersection of 5<sup>th</sup> Street and Yolo Avenue averaged approximately 53 dBA  $L_{eq}$ , with a maximum noise level of 63 dBA  $L_{max}$ .

*Existing Traffic Noise*

Existing traffic noise levels in the Project area were calculated using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108). The input data included average daily traffic levels for nearby area roadways; day/night percentages of autos, medium trucks, and heavy trucks; vehicle speeds; ground attenuation factors; and roadway widths. Average daily traffic volumes were calculated from existing peak hour traffic data included in the traffic section of this report. Vehicle distribution percentages were based on California average vehicle distribution obtained from the California Department of Transportation.

The existing calculated traffic noise contours for roadways in the vicinity of the Project site are presented in Table 4.10-2. As shown, traffic noise levels at 50 feet from the roadway centerline of area roadways range from approximately 64 to 70 dBA CNEL.

**Table 4.10-1**  
**Daytime Ambient Noise Monitoring**

GENERAL LOCATION	MONITORING PERIOD	MEASURED NOISE LEVEL (dBA CNEL)		
		$L_{MIN}$	$L_{MAX}$	$L_{EQ}$
Riverbend Park, Proposed Amphitheater Location	13:05– 13:20	42.1	61.6	55.6
Riverbend Park, Boat Ramp	13:30 – 13:45	45.2	56.0	50.1
Intersection of 5 <sup>th</sup> Street and Yolo Avenue	14:15 – 14:30	45.9	63.0	53.4

Notes: Noise measurements were taken on April 20, 2002 using a Larson Davis model 820 digital sound level meter calibrated prior to each measurement using a Larson Davis acoustic calibrator model CA250. Measurements were taken at a height of 4.5 feet.

Source: EDAW, Inc., 2002.

**Table 4.10-2  
Existing Traffic Noise Levels**

ROADWAY SEGMENT	PREDICTED TRAFFIC NOISE LEVELS (DBA CNEL) AT 50 FEET FROM ROADWAY CENTERLINE	DISTANCE TO NOISE CONTOURS		
		70 DBA CNEL	65 DBA CNEL	60 DBA CNEL
Highway 70				
North of Jct. Rte. 162	68.19	-	108.5	231.2
South of Jct. Rte. 162	70.02	68.2	142.8	305.7
North of Montgomery St.	69.53	63.6	132.6	283.6
South of Montgomery St.	68.19	-	108.5	231.2
North of Grand Ave.	69.66	64.8	135.3	289.3
South of Grand Ave.	69.53	63.6	132.6	283.6
Highway 99				
North of Jct. Rte. 162 West	68.97	-	102.6	220.7
South of Jct. Rte. 162 West	68.93	-	102.0	219.3
North of Jct. Rte. 162 East	68.02	-	105.8	225.3
South of Jct. Rte. 162 East	69.06	-	103.9	223.5
Highway 99				
East of Jct. Rte. 70	67.13	-	100.0	210.5
West of Jct. Rte. 70	64.00	-	59.1	122.5
East of Feather River Blvd.	67.37	-	103.5	218.1
West of Feather River Blvd.	67.13	-	100.0	210.5

Notes: Predicted noise levels were calculated using FHWA traffic noise prediction model (FHWA-RD-77-108). Based on the calculated average daily trips obtained from the traffic analysis prepared for this Project and route segment information reported by Caltrans. Assumes no intervening natural or man-made features.

Source: EDAW, Inc.

## 4.10.2 Regulatory Considerations

Federal, State, and local governments have established noise standards and guidelines to protect citizens from potential hearing damage and various other adverse physiological and social effects associated with noise. In general, Federal and State noise control regulations pertain to the control of transportation noise, land use compatibility, and occupational noise control. Local noise ordinances often establish additional noise standards and restrictions to ensure land use compatibility with noise-generating sources and for the control of nuisance noise. The standards and guidelines that are applicable to the Project are discussed below.

### ***Federal Regulations***

The U.S. Department of Housing and Urban Development (HUD) requires a determination for noise impacts for each request for funding to ascertain whether the Project would involve development of noise sensitive uses and whether the ambient noise level is 65 Ldn or less, based upon HUD Noise Assessment Guidelines (NAG) for calculating noise levels. These regulations do not apply to the Project, as HUD funds are not being pursued.

### ***State of California Policies***

Guidelines for General Plan Noise Elements were first prepared by the State Department of Health Services (DOHS) in 1976. The guidelines revised and clarified the requirements for the noise element of city and county general plans. In November 1998, the Governor's Office of Planning and Research for the State of California released its most recent update to the State's Guidelines. The Guidelines are advisory, not mandatory, and include guidance for the acceptability of designated land uses within specific noise contours. The land use compatibility noise standards recommended by the Governor's Office of Planning and Research are summarized in Table 4.10-3.

California law establishes minimum noise insulation standards for hotels, motels, dormitories, long-term care facilities, apartment houses, and dwelling units other than detached single-family dwellings. However, because none of these uses are proposed for the Project site, these policies are not applicable.

### ***Local Policies***

#### ***City of Oroville General Plan***

The Noise Element of the City of Oroville General Plan provides standards for evaluating the compatibility of land uses with respect to outdoor noise levels. The purpose of the land use compatibility analysis is to screen projects, which may require specific design considerations to mitigate noise impacts.

The noise compatibility standards identified in the City of Oroville General Plan are summarized in Table 4.10-4.



**Table 4.10-3  
Land Use Compatibility for Community Noise Environments**

LAND USE CATEGORY	EXTERIOR DAY/NIGHT NOISE LEVELS (DNL, DB)			
	NORMALLY ACCEPTABLE	CONDITIONALLY ACCEPTABLE	NORMALLY UNACCEPTABLE	CLEARLY UNACCEPTABLE
Residential Low-Density Single Family, Duplex, Mobile Homes	50 - 60	55 - 70	70 - 75	75 - 85
Residential Multi- Family	50 - 65	60 - 70	70 - 75	75 - 85
Transient Lodging- Motels, Hotels	50 - 65	60 - 70	70 - 80	80 - 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	80 - 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 - 70	NA	65 - 85
Sports Arena, Outdoor Spectator Sports	NA	50 - 75	NA	70 - 85
Playgrounds, Neighborhood Parks	50 - 70	NA	67.5 - 75	72.5 - 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 75	NA	70 - 80	80 - 85
Office Buildings, Business Commercial and Professional	50 - 70	67.5 - 77.5	75 - 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	75 - 85	NA

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any building involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made, and needed noise insulation features must be included in the design.

Clearly Unacceptable: New construction or development should generally not be undertaken.

NA: Not applicable.

Source: California Office of Planning and Research, 1998.

**Table 4.10-4**  
**City of Oroville Land Use Compatibility**  
**for Community Noise Environments**

LAND USE CATEGORY	EXTERIOR DAY/NIGHT NOISE LEVELS (L <sub>DN</sub> /CNEL, DBA)		
	FEASIBLE	PROBABLY FEASIBLE	USUALLY NOT FEASIBLE
Residential, Theaters, Auditoriums, Music Halls, Churches	50 - 60	60 - 70	70 - 85
Transient Lodging – Motels, Hotels	50 - 60	60 - 75	75 - 85
Schools, Libraries, Museums, Hospitals, Nursing Homes, Child Care	50 - 60	60 - 75	75 - 85
Playgrounds, Neighborhood Parks	50 - 70	70 - 75	75 - 85
Office Buildings, Retail Commercial	50 - 65	65 - 75	75 - 85
Industrial, Manufacturing, Utilities	50 - 70	70 - 85	—
Golf Courses, Outdoor Spectator Sports	50 - 70	70 - 80	80 - 85

Feasible: Specified land use is satisfactory. No noise mitigation measures are required.

Probably Feasible: Use should be permitted only after careful study and inclusion of protective measures as needed to satisfy the policies of the Noise Element.

Usually Not Feasible: Development is usually not feasible in accordance with the goals of the Noise Element.

Source: City of Oroville General Plan, 1995

The noise element of the Oroville General Plan also establishes noise level performance standards for new projects affected by non-transportation noise sources (Table 4.10-5), as well as maximum allowable noise exposure standards for transportation noise sources (Table 4.10-6). The noise standards presented in Tables 4.10-5 and 4.10-6 are based on noise metrics for evaluating land use compatibility with exterior and interior noise environments. For instance, as indicated in Table 4.10-5, Oroville has established an interior noise exposure of 45 dBA CNEL for residential land uses affected by transportation noise sources. Assuming a typical exterior-to-interior noise reduction of approximately 12 to 18 dBA with windows partially open, a 60 dBA CNEL exterior value would be anticipated to provide for the recommended interior noise environment. For non-transportation sources, Oroville has established additional noise standards that take into consideration the sensitivity of the noise receptor, the type of noise source, the noise reduction likely to be provided by intervening structures, and the degree to which

the noise source may interfere with speech, sleep, or other activities characteristic of the land use.

**Table 4.10-5**  
**Noise Level Performance Standards for New Projects**  
**Affected by or Including Non-Transportation Sources**

LAND USE	NOISE LEVEL DESCRIPTOR	EXTERIOR NOISE LEVELS		INTERIOR NOISE LEVELS	
		7AM TO 10PM	10PM TO 7AM	7AM TO 10PM	10PM TO 7AM
Residential	Hourly Leq, dBA	50	45	45	35
	Maximum Level, dBA	70	65	—	—
Transient Lodging	Hourly Leq, dBA	—	—	45	35
Hospitals, Nursing Homes	Hourly Leq, dBA	—	—	45	35
Theaters, Auditoriums, Music Halls	Hourly Leq, dBA	—	—	35	35
Churches, Meeting Halls	Hourly Leq, dBA	—	—	40	40
Office Buildings	Hourly Leq, dBA	—	—	45	45
Schools, Libraries, Museums	Hourly Leq, dBA	—	—	45	45

Note: For the purpose of the Noise Element, transportation noise sources are defined as traffic on public roadways, railroad line operations, and aircraft in flight. Non-transportation noise sources may include industrial operations, outdoor recreation facilities, HVAC units, loading docks, construction equipment, etc.

Source: City of Oroville General Plan, 1995

**Table 4.10-6**  
**Maximum Allowable Noise Exposure**  
**Transportation Noise Sources**

LAND USE	OUTDOOR ACTIVITY AREAS <sup>1</sup>	INTERIOR SPACES	
	LDN/CNEL, DB	LDN/CNEL, DB	LDN/CNEL, DB
Residential	60 <sup>3</sup>	45	—
Transient Lodging	60 <sup>3</sup>	45	—
Hospitals, Nursing Homes	60 <sup>3</sup>	45	—
Theaters, Auditoriums, Music Halls	—	—	35
Churches, Meeting Halls	60 <sup>3</sup>	—	40
Office Buildings	—	—	45
Schools, Libraries, Museums	—	—	45
Playgrounds, Neighborhood Parks	70	—	—

1. Where a location of outdoor activity areas is unknown, the existing noise level standard shall be applied to the property line of the receiving land use.
2. As determined for a typical worst-case hour during periods of use.
3. Where it is not possible to reduce noise in outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed, provided that practical exterior noise level reduction measures have been implemented and that interior noise levels are in compliance with this table.

Source: City of Oroville General Plan, 1995

#### Butte County General Plan

The Butte County General Plan Noise Element includes noise exposure information intended to serve as a basis for land use compatibility with exterior and interior noise environments within the unincorporated areas of the County. The noise exposure information is also intended to provide baseline levels for use in the development and enforcement of local noise control ordinances. The noise compatibility standards published by the California State Office of Planning and Research, shown in Table 4.10-3, have also been adopted by the County and incorporated into the Butte County General Plan Noise Element.

### **4.10.3 Project Consistency with Applicable Regulations**

The Project does not violate any of the noise or land use compatibility guidelines established by the U.S. Department of Housing and Urban Development, the California State Department of Health Services, Butte County, or the City of Oroville. Noise associated with the Project would include a minor increase in vehicle-related noise from increased traffic in the Project site, a minor increase in noise from park and recreational uses, and potentially significant, short-term increase in noise from construction activities during Project implementation. Construction-related noise increases have the potential to negatively impact nearby residents; implementation of minor mitigation measures, however, would reduce these impacts to less than significant, as discussed in Section 4.10.5. No other sensitive receptors would experience an increase in ambient noise environment. The Project is therefore consistent with all applicable policies, guidelines, and regulations.

### **4.10.4 Thresholds of Significance**

The Project would have a significant impact with respect to noise if it would result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- A substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project
- A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels

- Expose people residing or working in the Project area to excessive noise levels (For a project located in the vicinity of a private airstrip, within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport)

#### 4.10.5 Impacts and Mitigation Measures

Impacts on the noise environment associated with the Project would include a minor increase in vehicle-related noise, a minor increase in noise from park and recreational uses, and a ***less than significant*** short-term increase in noise from construction activities during Project implementation.

##### ***Less than Significant Impacts***

###### ***1. Permanent Effect on Ambient Noise Levels***

The Project would result in minor permanent increases in vehicle-related noise and noise from park and recreational uses. Vehicle-related noise, including car door slams, tire squeals, and engine sounds, would be most prevalent near parking areas, the road between the park entrance and day use area, and the boat launch area. At the expected level of park use, these noises would be minor, particularly in comparison to vehicle-related noise from traffic on Highway 70, Highway 162, and Montgomery Road. Because uses proposed for the site are generally the same as existing park uses, noise from increased park uses would be minor throughout the Project area and would not impact any areas outside of the Project boundary. Within the Project area, ambient noise level increases would be less than significant. Outside of the Project area, noise increases would be negligible in comparison to existing noise levels, most notably traffic along Highway 70, Highway 162, and Montgomery Road. The Project would result in only minor permanent effects on ambient noise levels, resulting in a ***less than significant*** impact.

###### ***2. Temporary or Periodic Effect on Ambient Noise Levels***

Table 4.10-7 shows the average noise levels of a variety of common construction activities and equipment.

**Table 4.10-7  
Construction Equipment Noise Emission Levels**

EQUIPMENT	TYPICAL NOISE LEVEL
	(IN DECIBELS) 50 FEET FROM SOURCE
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Mobile	83
Dozer	85
Generator	81
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	85
Paver	89
Pile Driver (Impact)	101
Pile Driver (Sonic)	96
Pneumatic Tool	85
Pump	76
Rock Drill	98
Roller	74
Saw	76
Scarifier	83
Scraper	89
Shovel	82
Truck	88

Source: Federal Transit Administration 1995

Though construction activities have the potential to create a significant impact on the existing noise environment through a substantial temporary increase in ambient noise levels, implementation of Best Management Practices for noise abatement, as detailed in Section 3.5, would reduce construction-related noise to less than significant. Additionally, the Project would not include any other components that could result in potentially significant temporary or periodic effects on ambient noise levels. Impacts associated with substantial temporary or periodic effects on ambient noise levels would therefore be *less than significant*.

### ***No Impacts***

#### ***1. Conformity with Applicable Noise Standards***

As discussed previously, the Project would not result in any violation of applicable noise policies, guidelines, or regulations. Therefore, the Project would result in ***no impact*** associated with the exposure of persons or generation of noise levels in excess of standards established in the Butte County and City of Oroville general plans or noise ordinances, or applicable standards of other agencies.

#### ***2. Groundborne Vibration and Groundborne Noise Levels***

Development of the park would not generate excessive groundborne vibration or groundborne noise levels, as no activities associated with the park would create these nuisances. Moreover, construction would not require blasting, pile driving, or other substantial forms of ground vibration. The Project would therefore result in ***no impacts*** associated with groundborne vibration and groundborne noise levels.

#### ***3. Exposure to Excessive Noise Levels - Airport***

The Project is located approximately 1.8 miles from the Oroville Municipal Airport, which is located off of Highway 162 on Chuck Yeager way. Though a land use plan has not been developed for the airport and its surroundings, it is close enough to the Project area that the Project site receives a minor amount of airplane overflight, which contributes to the ambient noise levels in the environment. As shown in Table 4.10-1, maximum ambient noise levels in the Project area do not exceed 63.0 dBA, and are therefore not excessive. Because the Project would result in a less than significant increase in ambient noise levels in the Project area, there would be ***no impact*** due to exposure of individuals working in the Project area to excessive noise levels. In addition, there would be no residences in the Project area and therefore no impact on individuals residing in the area.

## 4.11 HAZARDOUS MATERIALS

### 4.11.1 Environmental Setting

#### *Historic Uses*

The Project site was historically used for mining, dredging, and various recreational activities. Most notably, two significant periods of gold mining, from the 1850s to the 1890s and from 1905 to 1952, included heavy dredging of the Feather River adjacent to the Project site (Jim Lenhoff, pers. comm.). During these periods, dredge spoils were deposited throughout the Project area, where they remained in large mounds for several decades (see Figure 4.11-1). Much of this material was gravel and was removed by local gravel companies and used for construction of Oroville Dam in the 1960s. The remaining dredge spoils are largely concentrated on the southeastern portion of the site.



**Figure 4.11-1 Gold Dredge near Riverbend Park, Oroville**

In addition to being mined and dredged, the Boston Machine Shop was located in the Project area from the early 1900's until some time prior to the 1940s to repair dredging equipment that was used in the Feather River (Jim Lenhoff, pers. comm.). Prior to the 1940s, an above-ground dump was constructed in the northern portion of the Project site. The dump likely received large amounts of gravel and construction materials, although it may have received municipal and/or hazardous waste as well. The dump was closed, abandoned, and later removed from the area.



### ***Project Area Uses Associated with Hazardous Materials***

The previous use of heavy equipment in the Project area and the use of the area for dumping present possible sources of hazardous materials. However, the Project area is not listed on the California Department of Toxic Substances Control Hazardous Waste and Substances Site List (Cortese List), and the Project area is not suspected of toxic materials (Greg Melton, pers. comm.).

Historic heavy industrial activities in nearby areas, however, has created known areas of groundwater contamination at the former Koppers Company Feather River Wood Treatment Plant, Sierra Pacific, and Western Pacific Railroad facilities, which were all located between 1.0 and 2.5 miles from the Project site. The former wood treatment plant site currently is undergoing groundwater remediation using both an on-site groundwater treatment plant and bioremediation techniques. Moreover, the former Sierra Pacific facility is subject to on-going groundwater monitoring for formaldehyde, and the former Western Pacific facility is subject to on-going soil remediation due to soil contamination (CGPA EIR 1995). The distance of these sites from the Project area, however, precludes any risk of hazard to park staff or visitors.

### ***Hazardous Materials Management***

The City of Oroville's *Multi-Hazard Functional Disaster Plan* contains instructions for responding to a hazardous materials crisis. The cities of Oroville, Chico, Biggs, and Gridley, the Town of Paradise, and Butte County are all participants in a Joint Powers Agreement forming a Hazardous Materials Response Agency. The Agency has developed a Hazardous Materials Response Team (HAZMAT Team), comprised of 25 fire department personnel, that serves all member cities. The Team meets once a month for training and interaction with the Butte County Environmental Health Department, Oroville Paramedics, and other agencies expressing interest in the Team's operations. The HAZMAT Team performs a variety of functions including identification of hazardous materials and containment of hazardous material release.

The Oroville Solid Waste Disposal operates a Household Hazardous Waste Facility on South Fifth Avenue, where residents can drop off a wide variety of hazardous materials for proper disposal. This facility operates under the authority granted by the California Environmental Protection Agency, Department of Toxic Substance Control. The facility is currently open two days each month and accepts household hazardous wastes as well as "conditionally exempt small generator hazardous waste".

### ***Other Hazards***

Other hazards in the Project area include fire, flood, and seismic hazards. Due to the dry climate in the Project region, there is a high risk of fire and wildfire in the Project area. The large areas of open space, grassland, and shrubs to be maintained in the Project area would present a fire hazard during dryer months. Because the Project area is bordered on two sides by the Feather River and by major roads on the other two sides, the risk of fire reaching the Project area from an outside source or spreading from the park to adjacent areas is very low. The risk of fire in the Project area are would remain but would be no greater than under existing conditions and in surrounding areas.

Flood hazards are discussed in Section 4.4: Hydrology and Water Quality; seismic and other geologic hazards are discussed in Section 4.7: Geology and Soils.

## **4.11.2 Regulatory Considerations**

### ***City of Oroville***

The City of Oroville General Plan addresses hazardous materials in the Open Space, Natural Resources, and Conservation Element (Chapter 6 – Section 6.12) and the Safety Element (Chapter 8 – Section 8.40). Policies contained in these chapters include:

- 6.12h** Require applicants to take and analyze soil samples prior to grading or construction in areas with an historical or suspected presence of toxic materials, such as Superfund sites, or other sites identified by the City or concerned agencies. If contamination is discovered, prior to development, consult with the appropriate agencies and commence the Project clean-up measures.
- 6.12i** Construct treatment plants or systems, or require that those responsible for contamination construct treatment plants or systems to remediate contaminated groundwater to ensure availability of potable groundwater.
- 6.12j** Prohibit residential development in areas of known toxic contamination until such contamination has been remediated or mitigated.
- 8.40a** Protect residents and property from hazardous materials, by encouraging the recycling of hazardous waste, preventing accidents, and responding quickly in the event of an accident.
- 8.40b** Continue to participate in the Hazardous Materials Response Team authorized by the Joint Powers Agreement.

- 8.40c** Rely on the *Multi-Hazard Functional Disaster Plan* in the event of a hazardous materials accident.

### ***Butte County***

The Butte County General Plan lacks specific guidelines regarding hazardous materials disposal and development of contaminated areas. The only policy related to hazardous materials is in regards to transportation of hazardous materials through the county:

#### **Circulation Element:**

- 3.1.4** The County shall encourage the continued development and implementation of comprehensive state and federal programs for the regulation and monitoring of the transportation of hazardous and toxic materials on highways and railways in and through the County. Appropriate fire and emergency services agencies shall participate in plans for the transportation of hazardous and toxic materials in and through the County.

### ***State and Federal***

In addition to city and county regulations, there are a number of state and federal laws regulating the use and transport of hazardous materials, as well as the development of contaminated lands. Most applicable to the Project are the California Health and Safety Code, the Federal Acquisition Regulation, and all regulations set forth by the Occupational Safety and Health Administration (OSHA). These laws detail the acceptable standards for hazardous materials handling, transport, disposal, and management, as well as for the use of lands known or thought to contain hazardous materials. The California Health and Safety Code also discusses additional hazards, particularly fire and natural hazards, and OSHA regulations include all occupation- and workplace-related health and safety issues. All activities and development associated with the Project is subject to State and Federal regulation.

## **4.11.3 Project Consistency with Applicable Regulations**

### ***City of Oroville***

Several previous activities in the Project area could have resulted in soils or groundwater contamination, and there is a possibility that hazardous materials may still be present in the Project area. Consistency with City regulations requires that soil samples be taken and analyzed prior to grading or construction in the specific portions of the Project area previously used for industrial or dumping purposes. In the event that contamination is

discovered, consultation with the appropriate agencies and commencement of clean-up measures would be required prior to implementation of the Project. In addition, in the event that groundwater contamination is discovered in the Project area, a treatment plant or system would be required to remediate contamination to ensure availability of potable ground water.

Soil and groundwater samples would be conducted as necessary, and existing risk reduction measures would be applied in the Project area. The Project is therefore consistent with all applicable city regulations regarding hazardous materials.

#### ***Butte County***

Consistency with Butte County policies and regulations requires that the Project does not conflict with the hazardous materials guidelines detailed in the Circulation Element of the General Plan. The only hazardous materials associated with the Project are related to construction and grounds keeping, and transport of all hazardous materials would follow all applicable regulations. The Project is therefore consistent with applicable county regulations.

#### ***State and Federal***

The Project would not conflict with or obstruct implementation of any applicable State or Federal regulations. Project development would follow all applicable regulations.

### **4.11.4 Thresholds of Significance**

The Project would have an impact with respect to hazards and hazardous materials if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
- Result in a safety hazard for people residing or working in the Project area (For a Project located in the vicinity of a private airstrip, within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport)

- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

#### 4.11.5 Impacts and Mitigation Measures

The Project involves the construction of a variety of infrastructure, parking, trails, and structures to serve the various park and recreational uses proposed for the Project area. The Project, however, would not include any construction or operation activities involving significant amounts of hazardous materials. Potential impacts associated with hazardous materials, along with their levels of significance are detailed below.

##### ***Less than Significant***

###### 1. Routine Transport, Use, of Disposal of Hazardous Materials

Development of the Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials as no unusual use of hazardous materials is anticipated. Use of hazardous materials as defined and regulated through the California Code of Regulations would be limited to the periodic use of pesticides and herbicides in conjunction with maintenance of the landscaping. This represents a ***less than significant*** impact.

###### 2. Reasonably Foreseeable Upset or Accident Conditions

Reasonably foreseeable upset or accident conditions include only the spilling of the pesticides and herbicides that would occasionally be used in maintaining the park. Because the use, transport, storage, and disposal of these chemicals would follow all applicable regulations, and because the amount of each chemical to be stored and used in the Project area is negligible, the impact from reasonably foreseeable accident and upset conditions is ***less than significant***.

###### 3. Hazard to Residents or Employees

The Project is located approximately 1.8 miles from the Oroville Municipal Airport, which is located off of Highway 162 on Chuck Yeager way. Though a land use plan has not been developed for the airport and its surroundings, it is close enough to the Project area that the Project site receives a minor amount of airplane overflight. The Project would have no impact on airport operations and would not present a hazard to nearby residents. Though park employees would be exposed to hazardous materials when

using pesticides and herbicides during grounds maintenance, the associated risks would be *less than significant*.

### ***No Impact***

#### ***1. Impairment of Emergency Response or Evacuation Plans***

The Project would not impair the implementation of or physically interfere with any adopted emergency response or emergency evacuation plan. Therefore, there would be ***no impact*** associated with impairment of such plans.

#### ***2. Listed Hazardous Materials Site***

As mentioned above, the Project site is not listed on the California Department of Toxic Substances Control Hazardous Waste and Substances Site List (Cortese List), no contamination has been reported in the area, and the area is not suspected of contamination (Greg Melton, pers. comm.). The Project site is not included on the list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. The Project would not involve creation of a hazard to the public or the environment, and therefore ***no impact*** would result.

#### ***3. Fire Hazards***

Development of the park would not increase fire hazards in the Project area and would not impair or interfere with the implementation of any fire prevention or protection plans and procedures. Existing roadways surrounding the park would remain in use, and paved vehicular access to the inner-park would be improved. There would therefore be ***no impact*** associated with risk of loss, injury, or death involving wildland fires under the Project.

## 5.0 CUMULATIVE IMPACTS

### 5.1 INTRODUCTION

According to CEQA (Section 21083), a project may have a significant effect on the environment requiring disclosure in an EIR if its possible effects are individually limited but "cumulatively considerable." Cumulatively considerable means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, other current projects, and probable future projects. Evaluation of cumulative effects should reflect the severity of impacts as well as the likelihood of their occurrence, although the level of detail need not be as great as that for evaluation of project-specific impacts.

Section 15130 of the *CEQA Guidelines* provides direction regarding cumulative impact analysis as follows:

- An EIR should not discuss cumulative impacts that do not result in part from the Project;
- A lead agency may determine that an identified cumulative impact is less than significant, and would briefly identify facts and analysis in the EIR supporting its determination;
- A lead agency may determine a project's incremental effect is not cumulatively considerable, and therefore is not significant, and would briefly describe in the EIR the basis of its determination; and
- A lead agency may determine a project's cumulatively considerable contribution to a significant cumulative impact may be rendered less than cumulatively considerable and therefore residually not significant, if the project implements or funds its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.

The analysis of cumulative impacts for environmental factors can employ one of two methods to establish the effects of other past, current, and probable future projects. A lead agency may select a list of projects, including those outside the control of the agency, or alternatively, a summary of projections. These projections may be from an adopted general plan or related planning document, or from a prior environmental document that has been adopted or certified, and that describe or evaluate regional or area-wide conditions contributing to the cumulative impact.

Table 5-1, produced by the City of Oroville planning department (Jo Sherman, pers. comm.), lists applicable projects for this cumulative impact analysis. The table is a summary of projects in Oroville that are under construction, projects that have recently been approved, as well as projects that are currently being proposed. All projects noted are in the planning process.

Figure 5-1 shows the location of the 14 projects noted in Table 5-1. Only 3 projects (3, 4, and 8) are within one mile of Riverbend Park. Projects 2, 10 and 13 are within approximately 1.5 miles of Riverbend Park, while projects 1 and 11 are just less than two miles away. The remaining projects (5, 6, 7, 9, 12 and 14) are over two miles from the Project site.

Nelson Park is an existing 45 acre FRRPD park facility. The 34 acre expansion of Nelson Park will be designed to blend into the existing park. A representative theme of mining, logging and dredging will be incorporated into this new development. Structures and artifacts will be incorporated, as available.

The 34 acre park addition will include:

- Five soccer/multi-use fields
- One softball field
- Children and tot-play areas
- Large group picnic shade and barbeque structure
- Individual picnic tables
- Amphitheater and bandstand
- Parking (243 spaces)
- Trail system
- Retention / detention basin
- Fenced, 12+ acre vernal pool and wetland preserve
- Bridge over to the Forebay (future plans)
- Lights for sports fields

The park expansion will be constructed in phases. Phase I will consist of:

- Developing infrastructure at the site (sewer, storm drain system on site, well water).
- 3 multi-use soccer fields and 1 softball field
- Conduit for future lighting
- Parking (gravel)
- Restroom (portable)
- Drinking fountain



- Minimal trail system provide for interpretive panels for wetlands and vernal pools
- Vernal pool and wetland preserve
- Preserve cedar fence
- Picnic tables and benches
- Security lighting
- Conduit for a central control system

Phase II will consist of: (assumes funds will be made available for construction)

- 2 multi-use soccer fields
- Conduit for future lighting
- Amphitheater
- Patio around existing ball fields (not a part of contract)
- Restroom (6 person) / Sidewalks will be added as funds become available
- Additional trail system with interpretive signage
- Drinking fountain
- Picnic tables and benches

Phase III will consist of: (all based on funds made available for construction)

- Concrete Plaza
- Group Picnic area
- Individual Picnic area
- Play grounds
- Picnic tables and benches
- Central control system
- Field lighting
- Bridge to Forebay

The drainage on the site will be collected in field drains and piped to the new retention basin. At build out this park could handle several 600+ users. The improvements that are proposed for this park can be found in Appendix E. Riverbend Park is located approximately 1.5 miles to the south of Nelson Park, as shown on Figure 5-1.

Table 5-2, provided by DWR lists applicable projects for this cumulative impact analysis. Of the 19 DWR projects that are either under construction, or proposed, Figure 5-1 shows that none fall within one mile of Riverbend Park, one is within 1.5 miles, 1 is within 2 miles, and the remaining are located over 2 miles away in the greater Oroville community. Most of the DWR cumulative projects are located at existing Oroville Dam recreation facilities and involve only minor upgrades, or are located around the Thermalito Afterbay and Forebay and likewise include improvements to existing

recreation facilities. None of the 19 potential DWR projects would significantly add to the cumulative impacts of the Riverbend Park Project, or to the community of Oroville.

Proposition 40 was recently approved by the voters in Butte County. The main purpose of this funding is to establish a historic trail through downtown Oroville, as well as create a new cultural facility. As of July 2003, there have been no projects that have been proposed to utilize the Prop 40 funds. Due to no projects being proposed, no cumulative impacts would result from this source of funding (Bob Sharkey, pers. comm.).

**Table 5-1**  
**Current and Probable Future City of Oroville Projects**

PROJECTS UNDER CONSTRUCTION			PROJECTS APPROVED – NOT CONSTRUCTED				PROJECTS BEING PROCESSED		
Project Name, Location & Number	Land Area Acres	Sq. Ft.	Project Name, Location & Number	Land Area Acres	Sq. Ft.	Date Approved	Project Name, Location & Number	Land Area Acres	Sq. Ft.
Landmark Medical Olive Hwy (demo approx. 25,000 sq ft) [1]	8	58,000	Endeavor Homes 645 Cal Oak Rd. [3]		21,000	12-19-02	Kennedy Mini storage Olive Hwy & Foothill Blvd. [6]	7	589 units 70,000 sq. ft.
PIC Phase III Mira Loma Dr. / Table Mtn. [2]		40,000	Access Disability Consult. 2775 Feather River [4]		12,600	3-12-03	Linkside Subdivision Oro Dam Blvd. [7]	18.8	65 lots
			Oswald Subdivision Valley View Dr. [5]	2.98	3 lots tentative map approval	4-14-03	Grayhawk Investment Subdivision Gaylor & Grand [8]	3.5	30 lots tentative map approval
							Foothill Estates Subd. Foothill Blvd. [9]	10	25 lots
							Tracy & Assoc. Myers & Mitchell [10]	n/a	4,000
							RP Rehab. E. Oro Dam [11]	n/a	2,520
							Brandt Subdivision Glen Drive [12]	20	4 lots tentative map approval
							Cherokee Estates Subd. Cherokee Rd. [13]	5.38	19 lots
							Nejadian Subd. Brookdale Dr. [14]	8.35	30 lots

Source: City of Oroville, April 2003

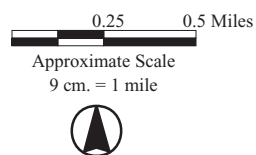
**Table 5-2**  
**Current and Probable Future DWR Projects**

PROJECTS UNDER CONSTRUCTION		PROPOSED PROJECTS	
Project Name Location and Letter	Size	Project Name Location and Letter	Size
[N] Loafer Creek Equestrian Camp Improvements	Existing site	[A] New Day Use Park along the east side of the Feather River between the Fish Barrier Dam and the Fish Diversion Dam.	20 acres
[O] Group Staging Areas	Existing site	[B] Feather River Fish Hatchery Landscaping Improvements. West end of the existing fish hatchery.	Existing site
[P] Saddle Dam Improvements	Existing site	[C] Enterprise launch ramp restroom upgrade	Existing site
[Q] Shooting Range	Existing site	[D] South Forebay Park restroom upgrade	Existing site
[R] Warning System for Water Releases	Existing site	[E] Model airplane club site restroom upgrade	Existing site
[S] Model Airplane Site Improvement	Existing site	[F] Wilbur Road launch ramp restroom upgrade	Existing site
		[G] Shooting range restroom upgrade	Existing site
		[H] Bidwell Saddle Dam staging area restroom upgrade	Existing site
		[I] Bidwell Exhibit	Existing site
		[J] Lake Oroville Overlook Improvements	Existing site
		[K] Reseed Oroville Dam	Existing site
		[L] Improve Day Use Parks	Existing site
		[M] Tournament Water Ski Site	On Water

Source: DWR, 2003 (Dale Hoffman-Floerke)



Source: CSAA 2001 / EDAW, Inc. 2003



EDAW

#### LEGEND

- ① Project location outside area shown
- ★ FRRPD Project (Nelson Park)
- 1. City of Oroville Projects
- A. DWR Projects (C - S are outside the cumulative project area)

DWR = Department of Water Resources  
FRRPD = Feather River Recreation and Park District

## Riverbend Park Cumulative Project Locations (City of Oroville, DWR, and FRRPD)

**Figure 5-1**

## **5.2 CUMULATIVE IMPACT DISCUSSION**

The Project, in conjunction with other projects in the Oroville area, would result in cumulative impacts to several resources. Some of these impacts, such as aesthetics, would be beneficial. Other impacts would be fully or potentially offset through the planning process or by developing specific mitigation measures. Any potentially significant and not mitigable cumulative impacts have been identified. Project cumulative impacts are described below.

### **5.2.1 Land Use**

The complete build-out of the projects noted in Table 5-1 would not result in any significant cumulative land use impacts. The projects identified in the surrounding Oroville area would increase housing and commercial space, as well as recreational opportunities. Less than 100 acres of land would be affected by developing both the City of Oroville as well as DWR projects. With the Project, just over 200 acres of land would be developed in the Oroville area, which would represent a small portion of the total Oroville area. Most of the cumulative projects in Oroville are small residential subdivisions, with a total of 765 new residences, small commercial uses such as mini-storage units, additions to existing businesses, or upgraded recreation facilities. The largest proposed project is the 98,000 square foot expansion of the existing Oroville Hospital.

The Project would not conflict with the existing land use designation of the site and the projects noted in Table 5-1 are in the process of applying for, or have already obtained, all applicable City permits; resulting in a less than significant land use impact (Jo Sherman, pers. comm.).

### **5.2.2 Aesthetics**

Most of the proposed projects in the Oroville area are small residential subdivisions, with a total of 765 new residences, small commercial uses such as mini-storage units, additions to existing businesses, or upgraded recreation facilities. None of the projects noted in Table 5-1 would be substantially different in size or scale than surrounding land uses. Oroville residents could experience a sense of greater urbanization from the increased residential development and expanded commercial facilities; however this would not substantially alter the character of the existing visual environment. The increase in the amount of recreation opportunities in the Oroville area offsets the more urbanized development. The Project would have the greatest impact on the visual

character of the Oroville area, and this would be beneficial. Cumulative visual impacts would not be significant.

### **5.2.3 Public Services and Utilities**

Implementation of the Project includes design measures to preclude any significant impacts to utility systems and public services at Riverbend Park. Likewise, the 34 projects (Tables 5-1, 5-2, and Nelson Park) would be responsible for ensuring no significant impacts to utility systems and public services by abiding to established design guidelines. Cumulative impacts of the 34 projects noted in Tables 5-1 and 5-2, along with the Project, on landfill capacity, water supply, and sanitary wastewater treatment are not expected to be significant given the adequate remaining capacity levels of the Sewerage Commission Oroville Region treatment plant and the Neal Road Landfill, and the adequate water supply of the area serviced by the California Water Services Company. Development of Riverbend Park, when added to the 34 cumulative projects, would increase demands on Oroville police and fire services. However, these increased demands would not be such that the Oroville Fire or Police Department would be unable to meet its target response time, or that construction of new facilities would be required (pers. comm., Marshal David Noel). As a result, cumulative impacts to fire and police protection services would not be significant.

### **5.2.4 Hydrology and Water Quality**

Only three of the cumulative projects noted in Table 5-1 (Cherokee Estates Subdivision, Access Disability Consulting, and PIC Phase III) are in proximity to the Feather River and Thermalito Diversion Canal, the two major waterways in the immediate area. Eleven of the projects noted in Table 5-1 are of sufficient distance from any major waterway that they would have little to no impact on water quality. All 19 of the DWR cumulative projects are in the immediate proximity to a waterway, either the Feather River, the Oroville Reservoir, or the Thermalito complex, yet the projects would consist only of upgrades to existing recreation facilities and therefore would not significantly alter the existing hydrology and water quality conditions. The Nelson Park site is located at the western end of the Thermalito Power Canal, and could have an impact on the Thermalito Forebay. The Project and several cumulative projects could impact water quality in the Feather River. All of the cumulative projects, and the Project itself, would obtain all applicable Federal, State, and local permits prior to construction to ensure a less than significant impact to hydrology and water quality. The Project would incorporate numerous measures to control impacts to the water quality of the Feather River. These measures would include implementation of storm water construction Best Management Practices (BMPs), installation and maintenance of storm drain filters at

parking areas, pressure-testing of all sanitary wastewater infrastructure, and backfilling of wastewater culverts within the 100-year flood plain with two sack sand slurry.

### **5.2.5 Cultural Resources**

It is unknown if there are subsurface culturally sensitive resources at any of the projects listed in either Table 5-1 or Table 5-2, as well as on the Project site itself, and therefore a significant impact could result. The Oroville area is home to known historic resources, and therefore mitigation measures would be applicable in all of the developments listed in both Table 5-1 and 5-2. To ensure a less than significant cumulative impact, all developments must abide by standard mitigation measures that protect culturally sensitive resources, if found. If any of the projects listed in either Table 5-1 or 5-2 have known historic resources currently on-site, measures would be required.

### **5.2.6 Biological Resources**

The Project in combination with the other approved projects in Oroville could result in some reduction in habitat, because Oroville supports habitat suitable for threatened and/or endangered animal and plant species. The cumulative projects listed in both Table 5-1 and 5-2 could require mitigation measures similar to those listed in Chapter 4.6 to reduce impacts, should they be located in areas supporting threatened and endangered species. The implementation of mitigation measures would ensure their protection, thereby reducing impacts to less than significant levels. The Project would protect threatened and endangered species and introduce additional native vegetation to increase habitat for these species.

### **5.2.7 Geology and Soils**

The proposed residential development in the area would expose people to geologic hazards. As shown in the Oroville General Plan, there are few areas in Oroville that are subject to landslide hazard. None of the cumulative projects would be located in a landslide hazard area. (City of Oroville, 1995) Liquefaction could affect the Project, as well as the cumulative projects that are located in proximity to the Feather River (see Figure 5-1). New residences and commercial facilities would not be placed in a hazardous geologic area, and therefore a less than significant cumulative impact would result. The recreation projects that are proposed for along the Feather River would not have a residential or commercial component. The structures that are proposed in the projects listed in Table 5-2 are designed to sustain recreational day use activities, and therefore would have a less than significant geologic cumulative impact.



The Oroville Dam is located north of the cumulative projects listed on Table 5-1. The nearest Alquist-Priolo Special Study Zone is associated with the Cleveland Hills Fault, located approximately seven miles southeast of the Project site. DWR has concluded that the Oroville Dam could withstand an earthquake of 6.5 on the Richter scale, resulting in a less than significant impact from dam inundation.

### 5.2.8 Traffic, Transportation and Circulation

The Project, in combination with the cumulative projects listed in Tables 5-1 and 5-2, would add to the congestion on Oroville Dam Boulevard, and would therefore result in a *significant* cumulative impact. The addition proposed for Nelson Park would not utilize the highly traveled Oroville Dam Boulevard and would therefore not add to the cumulative traffic impacts for this roadway. The additional vehicular traffic associated with the residential subdivisions, the expansion of the Oroville Hospital, the nearby recreation improvements, and the Project itself would be the main contributors to the increased traffic on Oroville Dam Boulevard. The Oroville General Plan Circulation Element recognizes the congestion along Oroville Dam Boulevard and identifies the need to widen the road. The city is currently in the process of obtaining funding for the road widening (Jo Sherman, pers. comm.).

#### **Impact: Delays on Oroville Dam Boulevard (Highway 162)**

The Oroville General Plan notes that Oroville Dam Boulevard currently experiences high volumes of traffic which causes delays, especially during the peak commute hours.

Mitigation Measure: During the construction phase of all new projects, the construction traffic would avoid Oroville Dam Boulevard, when possible, and have designated alternate routes. When possible, once the projects are completed, signage would be posted on-site to inform visitors/residents of the traffic delays and propose suggested alternative routes. When funding is obtained for the planned improvements to Oroville Dam Boulevard, this impact would be reduced.

### 5.2.9 Air Quality

The Northern Sacramento Valley Air Basin, the cumulative region of interest for air quality impacts in the project area, is currently classified as a nonattainment area for the State ozone and PM10 standards and as a transitional-nonattainment area for the Federal 1-hour ozone standard. Cumulative air quality issues in the NSVAB are

addressed through regional air quality control plans developed by the BCAQMD, Butte County, the City of Oroville, and other agencies within the NSVAB. Regional air quality control plans reflect anticipated regional land use and transportation patterns. BCAQMD believes that current air quality programs have improved air quality in the region, particularly ozone and PM10 concentrations. Furthermore, BCAQMD believes that existing plans will achieve all State and Federal air quality standards in the near future under anticipated development patterns. These plans are subject to periodic review and revision to ensure air quality continues to improve.

In combination with past, current, and probable future projects, construction and operation of the proposed project would contribute to cumulative air quality emissions, including ozone and PM-10, but would not result in cumulatively significant air quality degradation and would not significantly interfere with implementation of applicable air quality control plans.

#### **5.2.10 Noise**

The Project would contribute traffic to the local and regional transportation system, thereby contributing to the cumulative noise level in area. The creation of 765 new residences, as well as recreation facilities along the Feather River, would contribute additional traffic to the community, and the expansion of the Oroville Hospital could potentially increase the number of emergency vehicles with sirens. The relatively small amount of additional traffic would not substantially contribute to cumulative noise conditions. Construction related noise impacts would be mitigated by the use of Best Management Practices, as detailed in section 3.5. Cumulative noise impacts would not be significant.

#### **5.2.11 Hazardous Materials**

The Project would not result in any significant impacts associated with hazardous materials, as discussed in Chapter 4.11. Construction of the projects listed in both Table 5-1 and 5-2 would be in accordance with the Uniform Building Code and other applicable city regulations. The expansion of the Oroville Hospital could increase the amount of hazardous materials and waste generated by the hospital, which would be handled in accordance with a Hazardous Materials Plan. Cumulative impacts would not be significant.

## 6.0 ALTERNATIVES TO THE PROJECT

The alternatives analysis describes a range of reasonable alternatives to the Project that could feasibly attain most of the basic objectives of the Project, while avoiding or substantially lessening any significant impacts of the Project, and evaluates the comparative merits of the alternatives [CEQA Guidelines Section 15126(a)]. Alternatives that avoid or substantially reduce significant impacts are to be considered, even if these alternatives would impede to some degree the attainment of the Project objectives, or would be more costly [CEQA Guidelines Section 15126.6(b)].

The Riverbend Park Project has been described and analyzed in the previous chapters with an emphasis on potentially significant impacts and identified mitigation measures to avoid these impacts. The alternatives analysis is intended to inform the public and decision-makers of alternatives to the Project and the positive and negative aspects of those alternatives. As required by CEQA, this chapter also includes an analysis of the No Project Alternative [CEQA Guidelines Section 15126.6 (e)(3)(B)]. This DEIR evaluates alternatives that would lessen or avoid significant Project impacts identified in Chapter 4. It is important to note that the alternatives presented in this chapter should be looked at separately from the Project, described previously in Chapter 4.

The Project would result in significant impacts in the following resource areas: aesthetics, cultural resources, biological resources, and geology and soils. Some of these impacts could either be reduced or avoided by the three alternatives presented in this chapter, as listed below.

- Alternative 1: No Project
- Alternative 2: Cluster Development
- Alternative 3: Passive Recreation

The development alternatives meet the overall goals and objectives that the FRRPD established for Riverbend Park, but with slightly different focuses. The Cluster Development Alternative would provide a full range of program elements, while minimizing the amount of developed area. The Passive Recreation Alternative would include fewer built areas and a more rigorous restoration plan. Table 6-1 compares the alternatives to the Project. The following discussion describes each alternative and considers whether it would have a mitigating or adverse effect, when compared to the Project. Sections 6.1 – 6.3 describe each alternative. Section 6.4 compares the impacts of the alternatives to the Project in tabular form. Section 6.5 discusses the environmentally superior alternative.

**Table 6-1  
Project + Alternative Project Components**

PROJECT	ALTERNATIVE 1: NO PROJECT	ALTERNATIVE 2-CLUSTER	ALTERNATIVE 3 - PASSIVE REC.
<b>1. Infrastructure</b>			
Site Preparation	No	Yes	Yes
City Detention Pond - Existing	Existing	Existing	Existing
Grading and Contouring	No	Yes	Yes - minor
Install New Irrigation System	No	Yes	Yes
Expand Vegetation	No	Yes	Yes
Extend Utilities	No	Yes	Yes
Widen, Realign, and Pave Access Roads	No	Pave Only	Pave Only
<b>2. Parking</b>			
154 auto and 3 bus Road and Day Use Parking spaces ( 5 lots)	Approx: 243 (throughout)	155 (3 lots)	86 (2 lots)
32 Boat & 37 Auto Parking	25	32 boat & 34 car	32 boat & 34 car
37 auto in lot and 29 roadside auto parking at Meadow Trail Head	Existing Roadside	Existing Roadside (29 spaces)	Existing Roadside (29 spaces)
Turnaround w/short-term parking	No	No	No
Temporary Chamber Building - 6 spaces	N/A	0	0
291 Total Spaces	268	250	150
<b>3. Trails</b>			
Pedestrian Path/Hiking Trail	Partial path and trail	Interpretive Loop	Interpretive Loop
Multi-Use Gravel Path	No	Waterfront Trail	Waterfront Trail
Concrete Pedestrian Path - existing	Existing to remain	Existing to remain	Existing to remain
Trail to Council Ring	No	Yes	Yes
Multi-Use Gravel Bike Path - existing	Existing Bike Path	Existing Bike Path	Remove north bike connection

**Table 6-1**  
**Project + Alternative Project Components**

PROJECT	ALTERNATIVE 1: NO PROJECT	ALTERNATIVE 2- CLUSTER	ALTERNATIVE 3 -PASSIVE REC.
Realign road w/ bike lanes	No	Existing Road w/ bike lanes	Use Existing Road
Asphalt Bike Path	No	Yes	
<b>4. Landscape</b>			
Riparian + Upland Vegetation Restoration	No	Yes	Yes
New Meadow	No	No	No
Native Meadow	No	Yes	No
Turf Area	No	Yes	Yes
Native Garden Arboretum	No	Yes	No
Roundhouse	No	Yes	Yes
<b>5. Structures</b>			
Restrooms – 2 buildings	Portable (2)	2 buildings/1 composting toilet	2 buildings/1 composting toilet
Overlook Towers – 2 w/ signage	None	1 look-out platform	None
Chamber of Commerce Kiosk	No	No	No
50-person shade structure (9 tables / 2 BBQ) - 2	None	1	0
24-person shade structure (4 tables / 1BBQ)	None	4	0
Historic Wall/Flag Pole & Display	No	No	No
Chamber of Commerce Module	No	Yes	Yes
Gated Entrance	Yes	Yes	Yes
Council Ring	No	Yes	Yes
Ecology Nature Center – N/A	No	Yes	Yes
FRRPD/Natural History/Chamber of Commerce/Concessions	No	N/A	N/A

**Table 6-1**  
**Project + Alternative Project Components**

PROJECT	ALTERNATIVE 1: NO PROJECT	ALTERNATIVE 2- CLUSTER	ALTERNATIVE 3 -PASSIVE REC.
<b>6. Recreation</b>			
Disc Golf – 18 holes	9 holes	Yes	Yes
Children's Play Areas - 2	0	0	0
Boat Launch Improvements	No	Yes	Yes
Public Art Display	No	No	No
Single Picnic Tables - 36	10	26	Informal Picnic Areas
ADA Picnic Fishing - 5	0	0	0
Existing Exercise Areas	Yes	Yes	Yes

Source: Land Image/EDAW

## 6.1 NO PROJECT ALTERNATIVE

The No Project Alternative assumes no development on the Project site. The site would remain a partially developed recreation area providing limited recreation uses such as walking, picnicking, fishing and disc golf. The improvement to the boat launch ramp, new picnic tables, and expanded trails would not be implemented. The new buildings to house the FRRPD and associated park interpretive functions also would not be developed. Riverbend Park could accommodate interim leasing activities as approved by the FRRPD. Public access restrictions would not change from existing conditions under the No Project Alternative. The No Project Alternative would not be consistent with the goals of the FRRPD. The No Project Alternative would not meet the economic stimulus, tourism attraction, or provision of recreational amenities goals of the Project.

## 6.2 CLUSTER DEVELOPMENT ALTERNATIVE

The Cluster Development Alternative would provide the full range of program elements while minimizing the amount of developed site area. The purpose of this alternative would be to reduce physical impacts to the site and maximize green areas. The overall amount of development associated with this alternative would be less than the Project as illustrated by Figure 6-1.

The location of the Multi-purpose building would be very similar to the Project, located just south of the main entrance of the park. Likewise, the boat launch ramp and the associated parking would be designed similarly to the Project. The amount of parking associated with this alternative would be less than that of the Project (250 vs. 291 total spaces). There would be one main Multi-purpose Building with this alternative, whereas the Project would have a Recreation, Natural History, Chamber of Commerce and Concession building, as well as an Ecology Building. The Cluster Development Alternative would include a large outdoor amphitheatre, which would not be part of the Project. The goals and objectives of the FRRPD for Riverbend Park would be met by the Cluster Development Alternative.

The Cluster Development Alternative would include the following features:

**Boat Trailer Parking (40 spaces) and Improved Boat Launch.** The parking area layout would be revised to preserve the existing fitness trail and stations and to “fit” along the riverfront.

**Interpretive Loop Trail.** The loop trail would take advantage of the existing trail adjacent to the river and would add a new trail in an area that is already cleared of natural vegetation. The alignment of the new trail would be designed to avoid encroachment into the elderberry buffer.

**Bike Path Connection.** The concept for the bike path in the cluster plan would be to use the existing path from the north over to the existing road. From there, as part of the improvements to the existing road, a designated bike path would be provided, approximately 6 feet wide within the right of way of the existing road.

**Temporary Chamber of Commerce Headquarters.** A small building (1,000 SF) would be sited for use while the permanent structure (multi-use facility) is under construction. This would be placed adjacent to the existing road and in a location where the building will remain during construction.

**Multi-Purpose Building (recreation/natural history center/ecology nature center & chamber of commerce).** An approximately 15,000 to 20,000 square foot building would be located adjacent to the existing road and sited in an area of previous disturbance outside of the elderberry buffer area. A total of 121 parking spaces would be provided in this area.

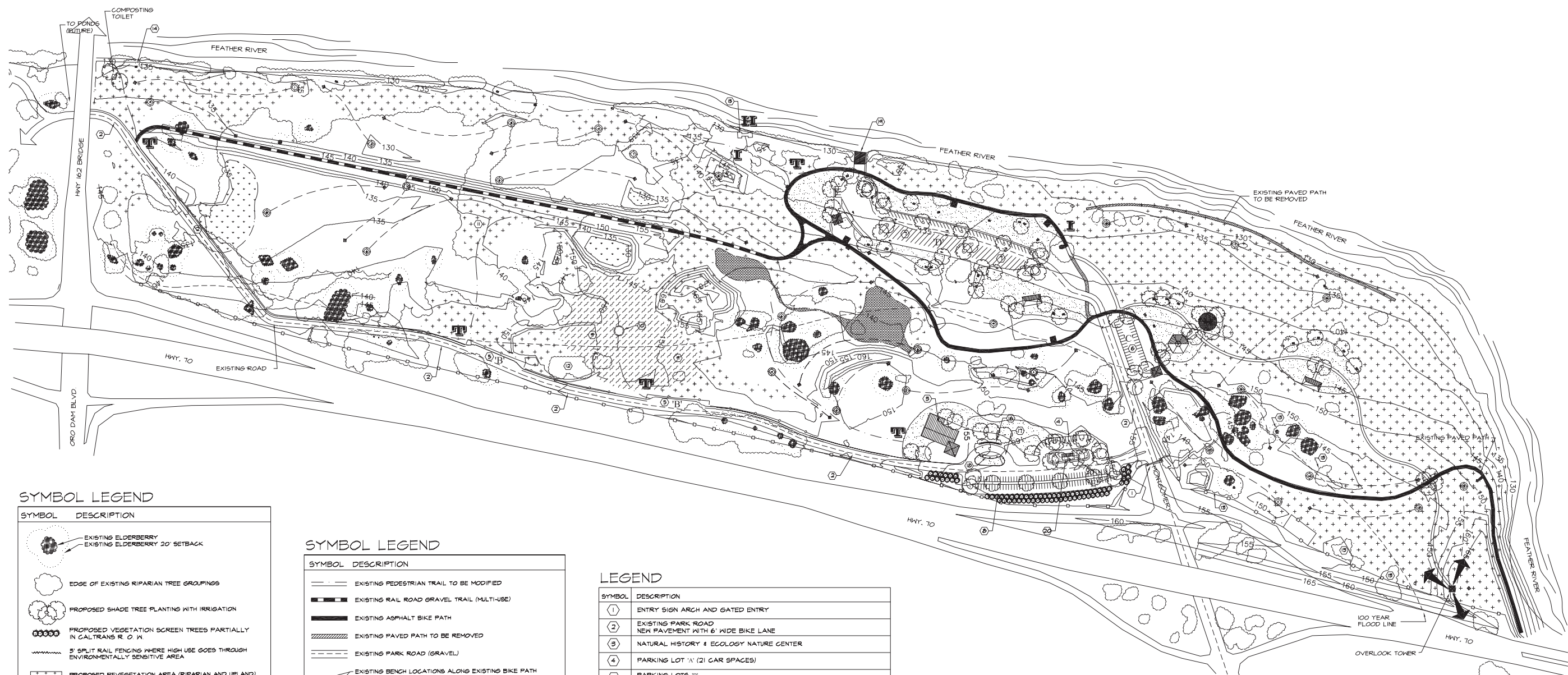
**Disc Golf Stations to Remain.** The layout of all proposed features would allow for the existing disc golf stations and course to stay intact. The disc golf course would be expanded to 18-holes.

**Day Use Parking (60 spaces.)** The existing parking lot would remain in its current location for day use activity; however, the layout would be designed to maximize its capacity. Additionally, a new pedestrian trail would be added from the parking lot to access the main picnicking area while still being separated from the bike path and outside of the 20-foot elderberry buffer.

**Restrooms.** Two restroom facilities would be included, as well as those within the multi-use building. Additionally, a composting toilet would be located at the southern corner of the site adjacent to the interpretive trail.

**Picnic Areas (26).** Picnic areas would be concentrated in the northern portion of the site to take advantage of the river front views and access to restrooms and parking area, as well as to consolidate resources and maintenance for this use.





# SYMBOL LEGEND

SYMBOL	DESCRIPTION
	EXISTING ELDERBERRY EXISTING ELDERBERRY 20' SETBACK
	EDGE OF EXISTING RIPARIAN TREE GROUPINGS
	PROPOSED SHADE TREE PLANTINGS WITH IRRIGATION
	PROPOSED VEGETATION SCREEN TREES PARTIALLY IN CALTRANS R.O.W.
	5' SPLIT RAIL FENCING WHERE HIGH USE GOES THROUGH ENVIRONMENTALLY SENSITIVE AREA
	PROPOSED REVEGETATION AREA (RIPARIAN AND UPLAND) WITH TEMPORARY IRRIGATION
	EXISTING WETLAND (RETAIN AND PROTECT)
	NATIVE PLANT GARDEN W/ TEMPORARY IRRIGATION
	EXISTING CITY STORM WATER DETENTION POND (RETAIN)
	EXISTING CONTOUR DESIGNATION
	PROPOSED TURF AREA WITH IRRIGATION
	TRAIL HEAD
	INTERPRETIVE SIGNAGE
	ACCESSIBLE OVERLOOK TOWER WITH VIEW ARROWS
	CHILDREN'S PLAY AREA
	24 PERSON SHADE STRUCTURE (4 TABLES / 1 BBQ) - (2)
	50 PERSON GROUP PICNIC AREA (4 TABLES / 2 BBQ) - (1)

# SYMBOL LEGEND

SYMBOL	DESCRIPTION
	EXISTING PEDESTRIAN TRAIL TO BE MODIFIED
	EXISTING RAIL ROAD GRAVEL TRAIL (MULTI-USE)
	EXISTING ASPHALT BIKE PATH
	EXISTING PAVED PATH TO BE REMOVED
	EXISTING PARK ROAD (GRAVEL)
	EXISTING BENCH LOCATIONS ALONG EXISTING BIKE PATH
	EXISTING EXERCISE AREA
	PROPOSED PEDESTRIAN PATH / HIKING TRAILS
	PROPOSED MULTI-USE CRUSHED ROCK PATH
	PROPOSED POROUS CONCRETE PEDESTRIAN PATH (ADA ACCESSIBLE)
	EXISTING CHAIN LINK FENCE
	EXISTING STEEL RAIL FENCE
	100 YEAR FLOOD PLAIN
	SINGLE PICNIC TABLE (38)
	RESTROOM (2)
	DISC GOLF TEE
	DISC GOLF BASKET
	COMPOSTING TOILET

EXISTING NORTH COURSE  
DISC GOLF HOLES 1 THROUGH 18 EXISTING  
HOLES 1, 8, 9, 15, 14 AND 17 RELOCATED  
NEW SOUTH COURSE HOLES 1-18 STARTING  
AT PARKING AREA 'F'

# LEGEND

SYMBOL	DESCRIPTION
(1)	ENTRY SIGN ARCH AND GATED ENTRY
(2)	EXISTING PARK ROAD NEW PAVEMENT WITH 6' WIDE BIKE LANE
(3)	NATURAL HISTORY & ECOLOGY NATURE CENTER
(4)	PARKING LOT 'A' (21 CAR SPACES)
(5)	PARKING LOTS 'B' MEADOW AND TRAIL HEAD (24 ROAD SIDE PARALLEL PARKING SPACES)
(6)	PARKING LOT 'C' (36 PARKING SPACES)
(7)	PARKING LOT 'D' (32 BOAT PARKING SPACES) (34 CAR PARKING SPACES)
(8)	PARKING LOT 'E' (100 CAR PARKING SPACES)
(9)	NATIVE GARDEN ARBORETUM
(10)	COUNCIL CIRCLE (EAST / WEST ORIENTATION)
(11)	NATIVE MEADOW
(12)	HIMALAYA BERRY (TO BE REMOVED)
(13)	TREE OF HEAVEN (TO BE REMOVED)
(14)	ADA ACCESSIBLE PICNIC / FISHING AREA
(15)	NORTHERN SACRAMENTO ABUTMENTS (RELIC CONCRETE ABUTMENTS) WITH INTERPRETIVE SIGNAGE
(16)	HISTORICAL WALL W/ INTERPRETIVE PANELS
(17)	VISITOR DROP OFF AND TURN AROUND
(18)	FLAG POLE DISPLAY
(19)	NEW CONCRETE BOAT LAUNCH WITH POROUS CONCRETE PARKING AND STAGING AREA
(20)	MODULAR CHAMBER OF COMMERCE BUILDING

# NOTES

- ALL CONSTRUCTION BELOW 100 YEAR FLOOD WILL BE REINFORCED TO WITHSTAND FLOWS
- ELDERBERRY SETBACKS ADJACENT TO CONSTRUCTION WILL BE PROTECTED.
- ALL CONCRETE PATHS ARE ACCESSIBLE.
- REVEGETATION TECHNIQUE WILL VARY DEPENDING LOCATION AND PROXIMITY TO RIVER.
- IRRIGATION WILL BE PERMANENT IN DEVELOPED LANDSCAPED AREAS AND TEMPORARY FOR REVEGETATION AND NATURALIZED AREAS.



SCALE: 1"= 150'-0"

DATE: APRIL 29, 2003

Riverbend Park  
Alternative 1: Cluster Development Plan  
EDAW  
Figure 6-1

Back of Figure 6-1

**Council Circle.** A meditative area would be set aside to provide access from the existing road via a foot trail that has been placed in a cleared area and designed to avoid encroachment into the 100-foot elderberry buffer.

**Vegetative Restoration Elements.** The Cluster Development Alternative would infill Elderberry buffer areas with native shrubs, plant cleared areas with grasses and shrubs for visual enhancement and restore areas disturbed during construction.

## 6.3 PASSIVE RECREATION ALTERNATIVE

The Passive Recreation Alternative would represent the least amount of development. The alternative would include fewer built areas and a more rigorous restoration plan. The purpose of this alternative would be to take advantage of existing site areas already utilized and enhance use with more well defined activities. A variety of restoration components would be included in the passive plan including large areas for native shrub restoration, riparian restoration. Naturalized picnic areas would be created.

Like the Project, the Passive Recreation Alternative would locate the Chamber of Commerce and FRRPD office directly south of the main entrance to the park. The Passive Recreation Alternative would provide 150 parking spaces, compared to 291 with the Project. All of the goals of the FRRPD would be realized with the Passive Recreation Alternative, assuming that bicycles would be allowed to travel along the eastern access roadway, connecting to the park to the south of Highway 162. Figure 6-2 illustrates the Passive Recreation Alternative concept.

The Passive Recreation Alternative would include the following program features:

**Boat Trailer Parking (32 spaces) and Improved Boat Launch.** The parking area would be laid out to preserve the existing fitness trail and stations and to “fit” along the riverfront.

**Interpretive Loop Trail.** The loop trail would take advantage of the existing trail adjacent to the river and would add a new trail in an area that is already cleared of natural vegetation. The alignment of the new trail would be designed to avoid encroachment into the elderberry buffer.

**Bike Path Connection.** The existing bike trail would be removed and the area restored with native vegetation.

**Temporary Chamber of Commerce Headquarters.** A small building (1,000 SF) would be sited for use while the permanent structure is under construction. This would be placed adjacent to the existing road and in a location where the building could remain during construction of the permanent Chamber of Commerce building.

**Natural History and Ecology Center.** A permanent building for the Park District and Chamber of Commerce would be located along Salmon Run Road with parking for 50 cars.

**Disc Golf Stations to Remain.** The layout of all proposed features would allow for the existing disc golf stations and course to stay intact and be expanded to 18 holes.

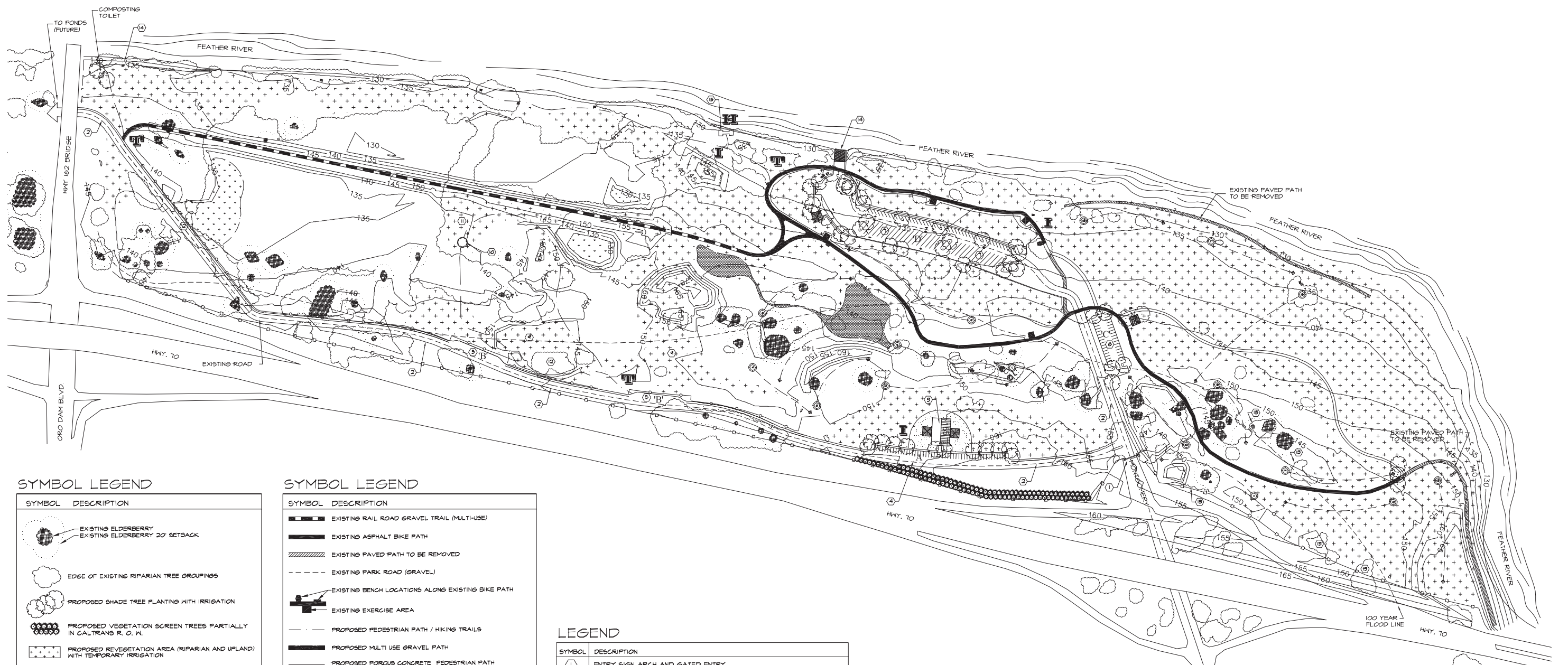
**Day Use Parking (60 spaces).** The existing parking lot would be left in its current location for day use activity; however, the layout would be improved to maximize its capacity. The existing bike trail would be supplemented with a new pedestrian trail from the parking lot to access the picnicking areas. This would provide an additional, shorter pedestrian loop trail on the site.

**Restrooms.** Two restroom facilities would be included as well as a composting toilet located at the southern corner of the site adjacent to the interpretive trail.

**Picnic Areas.** These would utilize existing flat areas under existing trees and along the waterfront. Small tables and or logs could be provided; however, shade structures would be eliminated.

**Council Circle.** A meditative area would be set aside that could be accessed from the existing road via a foot trail that would be placed in a cleared area and designed to avoid encroachment into the elderberry buffer.

**Vegetative Restoration Elements.** The Passive Recreation Alternative would include riparian corridor enhancements, native shrub infill within the Elderberry buffer, native tree planting to provide shade for picnic areas, planting of cleared areas with grasses and shrubs for visual enhancement, and restoration of areas disturbed during construction.



## SYMBOL LEGEND

SYMBOL	DESCRIPTION
	EXISTING ELDERBERRY EXISTING ELDERBERRY 20' SETBACK
	EDGE OF EXISTING RIPARIAN TREE GROUPINGS
	PROPOSED SHADE TREE PLANTING WITH IRRIGATION
	PROPOSED VEGETATION SCREEN TREES PARTIALLY IN GALTRANS R. O. W.
	PROPOSED REVEGETATION AREA (RIPARIAN AND UPLAND) WITH TEMPORARY IRRIGATION
	EXISTING WETLAND (RETAIN AND PROTECT)
	EXISTING CITY STORM WATER DETENTION POND (RETAIN)
	EXISTING CONTOUR DESIGNATION
	PROPOSED TURF AREA WITH IRRIGATION
	TRAIL HEAD
	INTERPRETIVE SIGNAGE

## NOTES

- ALL CONSTRUCTION BELOW 100 YEAR FLOOD WILL BE REINFORCED TO WITHSTAND FLOWS.
- ELDERBERRY SETBACKS ADJACENT TO CONSTRUCTION WILL BE PROTECTED.
- ALL CONCRETE PATHS ARE ACCESSIBLE.
- REVEGETATION TECHNIQUE WILL VARY PENDING LOCATION AND PROXIMITY TO RIVER.
- IRRIGATION WILL BE PERMANENT IN DEVELOPED, LANDSCAPED AREAS AND TEMPORARY FOR REVEGETATION AND NATURALIZED AREAS.

## SYMBOL LEGEND

SYMBOL	DESCRIPTION
	EXISTING RAIL ROAD GRAVEL TRAIL (MULTI-USE)
	EXISTING ASPHALT BIKE PATH
	EXISTING PAVED PATH TO BE REMOVED
	EXISTING PARK ROAD (GRAVEL)
	EXISTING BENCH LOCATIONS ALONG EXISTING BIKE PATH
	EXISTING EXERCISE AREA
	PROPOSED PEDESTRIAN PATH / HIKING TRAILS
	PROPOSED MULTI USE GRAVEL PATH
	PROPOSED POROUS CONCRETE PEDESTRIAN PATH (ADA ACCESSIBLE)
	EXISTING CHAIN LINK FENCE
	EXISTING STEEL RAIL FENCE
	100 YEAR FLOOD PLAIN
	SINGLE PICNIC TABLE (10)
	RESTROOM (2)
	DISC GOLF TEE
	DISC GOLF BASKET
	COMPOSTING TOILET

EXISTING NORTH COURSE  
DISC GOLF HOLES 1 THROUGH 18 EXISTING  
HOLES 1, 8, 9, 13, 14 AND 17 RELOCATED

## LEGEND

SYMBOL	DESCRIPTION
(1)	ENTRY SIGN ARCH AND GATED ENTRY
(2)	EXISTING PARK ROAD NEW POROUS PAVEMENT WITH 6' WIDE BIKE LANE
(3)	NATURAL HISTORY AND ECOLOGY NATURE CENTER
(4)	PARKING LOT 'A' (50 CAR SPACES)
(5)	PARKING LOTS 'B' MEADOW AND TRAIL HEAD (24 ROAD SIDE PARALLEL PARKING SPACES)
(6)	PARKING LOT 'C' (36 PARKING SPACES) GRAVEL
(7)	PARKING LOT 'D' GRAVEL (32 BOAT PARKING SPACES) (39 CAR PARKING SPACES)
(8)	NEW CONCRETE BOAT LAUNCH WITH POROUS CONCRETE PARKING AND STAGING AREA
(9)	NATIVE GARDEN ARBORETUM
(10)	COUNCIL CIRCLE (EAST / WEST ORIENTATION)
(11)	NATIVE MEADOW
(12)	HIMALAYA BERRY (TO BE REMOVED)
(13)	TREE OF HEAVEN (TO BE REMOVED)
(14)	ADA ACCESSIBLE PICNIC / FISHING AREA
(15)	NORTHERN SACRAMENTO ABUTMENTS (RELIC CONCRETE ABUTMENTS) WITH INTERPRETIVE SIGNAGE



SCALE: 1" = 150'-0"

DATE: APRIL 29, 2003



Back of Figure 6-2

## 6.4 COMPARATIVE IMPACT ANALYSIS

As previously discussed in Chapter 4 of this Draft EIR, implementation of the Project could result in significant impacts to the environment, in the areas of aesthetics, cultural resources, biological resources, and geology and soils sections. Table 6-2 below compares the environmental impacts of the alternatives to the Project. As shown in the table the No Project Alternative would have the least impact on the environment. The Cluster Alternative would reduce impacts from construction activities because structures would be concentrated in one area of the park, rather than spread throughout. The Passive Recreation Alternative would have fewer impacts because of the reduced number of buildings and overall restoration focus of the park development.

### 6.4.1 No Project Alternative

The No Project Alternative (NPA) involves no physical change to the existing landscape. As noted in Table 6-2, the majority of significant impacts for the Project would not be applicable to the NPA. Areas that pose a significant impact to the Project include, light and glare (aesthetics), cultural resources (all), special-status fish species – construction trapping (biological resources), special-status raptors, common raptors, and special-status songbirds (biological resources), and liquefaction of soil (geology and soils). The NPA does not have the potential to adversely affect the above mentioned resources, and therefore a less than significant impact would result. However, the NPA would result in significant impacts to the valley elderberry longhorn beetle and wetlands (biological resources) due to the lack of restrictions to park access.

The lack of designated parking spaces in the existing dirt parking area restricts the full use of the parking, which could potentially accommodate a maximum of 268 vehicles if parking spaces were designated. Alternatively, the project would provide a total of 291 designated paved parking spaces. There are currently trails and paths on the Project site. These would be improved and expanded following Project implementation. The NPA would not add any new vegetation to the Project site, whereas the Project would introduce riparian and upland vegetation restoration, a new meadow, as well as a new turf area. The most dramatic change between the NPA and the Project would be the amount of built development on site. Currently only portable toilets are on the Project site. Development of the Project would introduce numerous built structures to Riverbend Park, including permanent restrooms, overlook towers, two larger buildings for office and recreation use, as well as recreational shade structures. There are currently recreation opportunities available at Riverbend Park (a 9 hole disc golf course, picnic tables, and exercise stations), yet these would be substantially expanded with the Project to include a larger disc golf course, additional picnic tables, children's play areas,

and boat launch improvements. No landscaping currently exists on the Project site, which would change with development of the Project to include a native garden arboretum and roundhouse.

### **6.4.2 Cluster Alternative**

The Cluster Development Alternative (CDA) is similar to the Project. As noted in Table 6-2, the impact ratings for these two alternatives would be identical for all resource areas. Significant impact determinations are based on the potential for a disturbance, and even though there would be less development proposed with the CDA compared to the Project, the same mitigation measures would be required to ensure that sensitive resources are not adversely impacted. Wetlands (biological resources) would have less potential to be impacted, as the CDA proposes construction farther away from this sensitive area. Even though there would be less potential to impact wetlands, the possibility would still be present, and therefore a significant impact would result.

As described in Chapters 3, 4 and Table 6-1, the main difference between the two alternatives is that the Project involves construction of two buildings, whereas the CDA only proposes one. Furthermore, only one overlook tower and 50 person shade structure would be constructed with the CDA, whereas the Project would include two. In comparison to the Project, there would be 41 fewer parking spaces with the CDA. The bike path network would utilize the existing roadways under the CDA, whereas the Project would both realign the roadway to include a designated bike path as well as create an asphalt bike path throughout the site. The large area for a new meadow proposed under the Project would not be included in the CDA. The recreation opportunities with the CDA are similar to the Project, yet there would be 10 fewer picnic tables, no designated children play areas, and no public art display.

### **6.4.3 Passive Recreation Alternative**

The Passive Recreation Alternative (PRA) involves less development than the Project. However, as noted in Table 6-2, the significant impact ratings would not be reduced in any instance by the PRA. Significant impact determinations are based on the potential for a disturbance, and even though there would be less development proposed with the PRA compared to the Project, the same mitigation measures would be required to ensure that sensitive resources are not adversely impacted. Wetlands (biological resources) would have less potential to be impacted, as the PRA proposes construction further away from this sensitive receptor. Even though there would be less potential to impact wetlands, the possibility would still be present, and therefore a significant impact would result.



As noted in Table 6-2, the PRA includes only one building, in comparison to the two proposed under the Project. The Project would have 141 more parking spaces than the PRA. Instead of improving bike connections, the PRA would remove the northern bike path on the Project site. The PRA would not introduce a new meadow to the Project site, whereas the Project would. There would be no overlook towers, 50 person shade structures, 24 person shade structures, historic walls, or a Chamber of Commerce kiosk under the PRA. In comparison to the Project, the PRA would have fewer recreation opportunities, ranging from no designated children play areas or public art displays to only informal picnic areas.

## **6.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE**

CEQA requires the identification of the environmentally superior alternative. If the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives ((CEQA Guidelines, Sec. 15126.6 (e)(2))). Although the No Project Alternative would result in fewer environmental impacts, CEQA requires the Lead Agency to balance, as applicable, the economic, social, and other benefits of a Project against its environmental effects when determining whether to approve the Project (Guidelines, Sec. 15093a). The No Project Alternative would not meet the following Project goals to:

- Create a river-oriented, regional-type park to serve both residents and visitors to the Oroville area;
- Utilize previously disturbed land to support leisure and recreation activities; and
- Enhance visitor experience and provide revenue to support the recreation opportunities provided in the park.

The Passive Recreation Alternative would be the environmentally superior alternative because it would minimize disturbance to existing natural features, while restoring large areas of the park to native vegetation. Under this alternative, the Elderberry buffer area would be in-filled with native shrubs, new native trees would be planted throughout the park, cleared areas would be planted with grasses and shrubs, and areas disturbed during construction would be restored.

**Table 6-2**  
**Comparison of Significant Project Impacts**

RESOURCE AREA & SIGNIFICANT IMPACTS	PROJECT	NO PROJECT ALTERNATIVE (NPA)	CLUSTER DEVELOPMENT ALTERNATIVE (CDA)	PASSIVE RECREATION ALTERNATIVE (PRA)
<b>Aesthetics</b>				
Light and Glare	Due to the remoteness of the site, the addition of 52 lighting structures placed throughout the site, would represent a noticeable change, and significant impact. The new lighting on the Project site would be clearly visible and attract the attention of nearby residents as well as those traveling along Highway 70. The introduction of the Project lighting would change the visual relationship of the site to the surrounding landscape.	With no changes occurring under the No Project Alternative, no additional lighting would be added and there would be no adverse visual impact.	The Cluster Development Alternative would have the same adverse visual impact as the Project due to new lighting placed on the site. The amount of new lighting under the CDA would be similar to the Project. The majority of new lighting would be added to the center portion of the site, where most of the development would be located. Similar amounts of lighting would be placed along the new roadways and parking areas under the CDA. The same mitigation measures noted for the Project would be required for the CDA.	Less lighting would be used under the Passive Recreation Alternative, in comparison to the Project. With only three lights currently on the site, the amount of new lighting required for the PRA would be a significant visual impact. Even though under the PRA there would be less lighting than the Project, under CEQA the impact would still be considered significant, due to the occurrence of a substantial visual change. The same mitigation measures noted for the Project would be required.
<b>Cultural Resources</b>				
Archaeological Resources	The Project site has not had a detailed survey for archaeological resources. Should this activity not identify any significant archaeological resources, there is always a chance that such resources may become apparent once vegetation is removed or during construction excavation. Indicators of prehistoric site activity include charcoal, obsidian or chert flakes, grinding bowls, shell fragments, bone, and pockets of dark friable soils. The disturbance of archaeological resources including human remains as a result of the development of the Project would constitute a significant impact.	With no changes occurring under the NPA, the potential for disturbance of archaeological resources is greatly reduced.	Even though the CDA involves less construction than the Project, the potential for disturbing archaeological resources still exists, and therefore the same mitigation measures would be required for this development alternative.	The PRA involves much less development than the Project, yet the potential to disturb archaeological resources still exists, and therefore the same mitigation measures would need to be incorporated. With construction occurring on the Project site, a significant impact rating would be required.

**Table 6-2**  
**Comparison of Significant Project Impacts**

RESOURCE AREA & SIGNIFICANT IMPACTS	PROJECT	NO PROJECT ALTERNATIVE (NPA)	CLUSTER DEVELOPMENT ALTERNATIVE (CDA)	PASSIVE RECREATION ALTERNATIVE (PRA)
Paleontological Resources	The site has no known paleontological resources or unique geologic features that would suggest the presence of these resources. However, it is possible that unknown paleontological resources could be discovered during the development of the Project, which represents a significant impact.	With no changes occurring under the NPA, the potential for disturbance of paleontological resources is greatly reduced.	Even though the CDA involves less construction than the Project, the potential for disturbing paleontological resources still exists, and therefore the same mitigation measures would be required for this development alternative.	The PRA involves much less development than the Project, yet the potential to disturb paleontological resources still exists, and therefore the same mitigation measures would need to be incorporated. With construction occurring on the Project site, a significant impact rating would be required.
Human Remains	The site has no known human remains, including those interred outside of formal cemeteries. However, it is impossible to be sure about the presence or absence of human remains on a site until site excavation and grading occurs. The disturbance of human remains during the development of the Project would constitute a significant impact.	With no changes occurring under the NPA, the potential for disturbance of human remains is greatly reduced.	Even though the CDA involves less construction than the Project, the potential for disturbing human remains still exists, and therefore the same mitigation measures would be required for this development alternative.	The PRA involves much less development than the Project, yet the potential to disturb human remains still exists, and therefore the same mitigation measures would need to be incorporated. With construction occurring on the Project site, a significant impact rating would be required.
<b>Biological Resources</b>				
Valley elderberry longhorn beetle	The Project site contains elderberry bushes that provide habitat for the valley elderberry longhorn beetle, which is a federally-listed threatened species. Due to the “threatened” status of this beetle, disturbance of the elderberry bushes would constitute a significant impact. The Project incorporates a 20-foot setback between every elderberry bush and Project features, including construction activities. Additional mitigation measures are necessary to prevent “take” of this species.	The Valley elderberry bushes could be disturbed by activities currently occurring on the site, such as Frisbee golf, and unrestricted driving, thereby representing a significant impact. On the other hand, the NPA would involve no new development on the Project site, which would negate the potential adverse impact to the elderberry habitat from construction activities.	The CDA would have a similar amount of development to the Project, yet it would be focused in the center portion of the site. With most of the valley elderberry habitat lying on both the northern and southern portions of the site, the CDA would have less potential for impact. Any construction efforts near the threatened habitat would constitute a significant impact under CEQA, and therefore the CDA would be required to follow the same mitigation measures as the Project.	Even though less development would occur under the PRA, a significant impact would result due to the potential for disturbance of threatened valley elderberry habitat. Like the CDA, there would be less potential for there to be an impact on this threatened habitat due to the lower amount of overall development. However, the potential would still exist, thereby requiring the same mitigation measures.

**Table 6-2**  
**Comparison of Significant Project Impacts**

RESOURCE AREA & SIGNIFICANT IMPACTS	PROJECT	NO PROJECT ALTERNATIVE (NPA)	CLUSTER DEVELOPMENT ALTERNATIVE (CDA)	PASSIVE RECREATION ALTERNATIVE (PRA)
Special-Status Fish Species — construction trapping	<p>The special-status species that could occur in the Feather River beside the Project site are: spring-run chinook salmon (federally- and state-threatened), fall-run chinook (federal candidate and California species of special concern), the Central Valley evolutionary significant unit of steelhead (<i>Oncorhynchus mykiss</i>) (federally-threatened and California species of special concern), Sacramento splittail (federally-threatened and California species of special concern), green sturgeon (Federal Candidate and California species of special concern), hardhead (California species of special concern), and river lamprey (California species of special concern). Retrofit of the boat ramp could affect special-status fish species. The construction of the boat ramp entails use of steel sheeting to separate the construction area from the rest of the river. Fish species could become trapped within the area enclosed by the steel plating, representing a significant impact.</p> <p>In addition to directly trapping special-status fish species, the retrofitting of the boat ramp could generate sediment that could affect downstream water quality and spawning areas, therefore representing a significant impact.</p>	The NPA would involve no changes to the existing boat ramp, therefore representing no impact on special-status fish species.	The CDA would involve the identical upgrade of the boat launch ramp as the Project. This would therefore represent the same significant adverse impact. The same mitigation measures would be required for the CDA, as noted for the Project.	The PRA would involve the identical upgrade of the boat launch ramp as the Project. This would therefore represent the same significant adverse impact. The same mitigation measures would be required for the PRA, as noted for the Project.

**Table 6-2**  
**Comparison of Significant Project Impacts**

RESOURCE AREA & SIGNIFICANT IMPACTS	PROJECT	NO PROJECT ALTERNATIVE (NPA)	CLUSTER DEVELOPMENT ALTERNATIVE (CDA)	PASSIVE RECREATION ALTERNATIVE (PRA)
Special-Status Raptors, Common Raptors, and Special-Status Songbirds	Special-status raptors (osprey, Cooper's hawk, western burrowing owl, long-eared owl) and common raptors (red-tailed hawk, red-shouldered hawk, and great-horned owl) could nest in the riparian woodland of the Project site. Other species of special-status birds (willow flycatcher, loggerhead shrike, yellow warbler, yellow-breasted chat) could also nest in the riparian woodland or otherwise on-site. Construction activity at the park could affect the nesting of raptors including special-status raptors and cause them to abandon active nests. Construction activity could result in the destruction of the nests of these special-status bird species. This would be a significant impact without mitigation.	The NPA would not involve construction on any part of the Project site. With no construction activity, there would be no adverse impact.	The CDA would involve similar amounts of construction to the Project. Most of the construction would be focused in the center portion of the site, and therefore reduce the risk of disturbing the habitat for special-status raptors. Minor amounts of construction, specifically work on the eastern access roadway and trail to the north of the main entrance would occur near habitat for special-status raptors. Any potential for destruction of the raptor's nests, or habitat disturbance causing abandonment of nests represents a significant impact, under CEQA, and mitigation would be required. The PRA would use the same mitigation noted for the Project.	The PRA would involve less construction activities than the Project, yet construction, specifically work on the eastern access roadway and trail to the north of the main entrance would occur near habitat for special-status raptors. Any potential for destruction of the raptor's nests, or habitat disturbance causing abandonment of nests represents a significant impact, under CEQA, and mitigation would be required. The PRA would use the same mitigation noted for the Project.
Wetlands	Wetlands are valuable biological resources that provide important ecosystem functions especially regarding protection of water quality and enhancing biological diversity. Regulatory agencies such as the U.S. Army Corps of Engineers and the Water Resources Control Board regulate impacts to wetlands. The Project could affect jurisdictional wetlands. The wetlands are located at the edge of the Feather River including the area beside the boat ramp and in depressions in the central portion of the Project site. Retrofit of the boat ramp could affect a small amount of adjacent wetland and the location of the handicap fishing and picnic areas along the edge of the	The NPA nullifies the potential construction impact on Project wetlands. On the other hand, the NPA represents just as significant an adverse impact as the Project, due to the unregulated use of the site. Currently, individuals are free to wander wherever they choose on the Project site, and therefore represent a higher potential impact than if the site was developed and usage was restricted to certain areas. Mitigation to protect the existing wetlands on the Project site would be required for the NPA.	Very little development would occur near the three main Project site wetlands under the CDA. However, like the other two action alternatives, development would occur along the shoreline of the site, in particular at the boat launch ramp area. This construction work would impact the wetlands along the shoreline and would therefore represent a significant impact. The mitigation measures noted for the Project would be required for the CDA as well.	Under the PRA, development would be further from the three main wetland locations on the Project site, representing less of an impact than the Project. Construction would occur in the vicinity of wetlands, especially along the shoreline by the boat launch ramp. Due to the potential for wetland impact, the same mitigation measures noted for the Project would be required for the PRA.

**Table 6-2**  
**Comparison of Significant Project Impacts**

RESOURCE AREA & SIGNIFICANT IMPACTS	PROJECT	NO PROJECT ALTERNATIVE (NPA)	CLUSTER DEVELOPMENT ALTERNATIVE (CDA)	PASSIVE RECREATION ALTERNATIVE (PRA)
	river could also affect wetlands. The Project description calls for planting more than one acre around the existing detention pond with native wetland vegetation. However, regulatory agency policies require that impacts to wetlands be avoided where feasible, therefore impacts to jurisdictional wetlands are significant without mitigation.			
<b>Geology and Soils</b>				
Liquefaction of Soil	Due to the proximity of the Project site to the Feather River, there is a moderate to high risk of liquefaction of the soils that would be developed (as noted in the Oroville General Plan). This represents a significant impact.	With no development proposed under the NPA, the potential for damage or injury due to liquefaction would be less than significant.	Even though the design of the CDA places the majority of development in the center portion of the Project site, the potential for liquefaction of soil is still present. Development of the CDA would result in the same significant impact that would be present for the Project. The same mitigation would be required for the CDA as would be for the Project.	The location of the Project site in an area of moderate to high risk of liquefaction results in a significant impact on the development of the PRA. Even though less development would occur under the PRA, the impact would be the same, due to the insignificance of what is built on the surface during an earthquake. The same mitigation would be required for the PRA as would be for the Project.

Source: EDAW, 2003.

## 7.0 GROWTH INDUCEMENT

An EIR must discuss the ways in which the Project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment (CEQA Guidelines § 15126.2(d)). Included in this are projects that would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects.

The Project would not increase the sphere of influence for any utility. The Project would not expand the capacity of the area to accommodate further development, as no property immediately surrounding the Riverbend Park site would become more accessible or developable as a result of the Project. The only property bordering Riverbend Park is the 100+ acre park to the south, which is already developed.

Because the Project would not involve the addition of any residential units, it would not be considered growth inducing.

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## **8.0 OTHER CEQA REQUIRED SECTIONS**

As required by CEQA, this chapter provides discussion of the following CEQA-mandated conclusions: unavoidable significant impacts, and significant irreversible environmental changes that would be involved in the Project, should it be implemented.

### **8.1 UNAVOIDABLE SIGNIFICANT IMPACTS**

As required by CEQA Guidelines (Section 15126.2(b)), an EIR must describe any significant impacts that cannot be avoided, including those that can be mitigated but not reduced to a level of insignificance. Chapter 4 of this EIR provides a description of the potential environmental impacts of the Project and recommends various mitigation measures to reduce impacts, to the extent feasible. After implementation of the recommended mitigation measures, most of the impacts associated with the Project would be reduced to a less-than-significant level.

There are no significant impacts that cannot be mitigated to a less-than-significant level. Therefore, a Statement of Overriding Considerations would not be required for this Project, if it were to be approved.

### **8.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD BE CAUSED BY THE PROPOSED PROJECT**

“Significant irreversible environmental changes” include the use of nonrenewable natural resources during the initial and continued phases of the Project, should this use result in the unavailability of these resources in the future. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with projects. Irretrievable commitments of these resources are required to be evaluated in an EIR to assure that such current consumption is justified (CEQA Guidelines Section 15126.2(c)).

Natural resources include minerals, energy, land, water, forestry, and biota. Nonrenewable resources are those resources that cannot be replenished by natural means, including oil, natural gas, and iron ore. Renewable natural resources are those resources that can be replenished by natural means, including water, lumber, and soil.

Although the Project would use minor amounts of both renewable and nonrenewable natural resources for Project construction, this use would not increase the overall rate of use of any natural resource, or result in the substantial depletion of any nonrenewable natural resource.

Lastly, the Project is not anticipated to result in irreversible damage from environmental accidents, such as an accidental spill or explosion of a hazardous material. During the construction of the Project, equipment would be using various types of fuel. In the State of California, the storage and use of hazardous substances are strictly regulated and enforced by various local and regional agencies. The enforcement of these existing regulations would preclude credible significant Project impacts related to environmental accidents.

## 9.0 REPORT PREPARATION AND REFERENCES

### 9.1 LEAD AGENCY

Feather River Recreation and Park District  
1200 Myers Street  
Oroville, CA 95965

Contact: Robert Sharkey, Superintendent

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### 9.3.2 Persons and Agencies Contacted

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- Bishop, Robert. City of Oroville Planner, personal communication with Josh Teigiser of EDAW, April 22, 2002.

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Brown, Mitchell. Chief, Oroville Police Department, personal communication with Donna Plunkett of EDAW, June 10, 2002.

Dugger, W. Eric. Solid Waste Engineer, Butte County DPW, personal communication with David Greenblatt of EDAW, May 20, 2003.

Eng, Larry. Deputy Regional Manager, Department of Fish and Game, personal communication with Ian Ferguson of EDAW, March 7, 2003.

Gibbons, Felicia. Assistant Civil Engineer, City of Oroville Department of Public Works, personal communication with David Greenblatt of EDAW, May 15, 2003.

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Peters, Carl. Norcal Waste Systems, personal communication with Donna Plunkett of EDAW, June 11, 2002.

Sherman, Jo. City of Oroville Planning Director, personal communication with Josh Teigiser of EDAW, April 24, 2003.

Sousa, Ray. Superintendent of Sewerage Commission Oroville Region (SCOR), personal communication with David Greenblatt of EDAW, May 20, 2003.



## **Appendix A:**

Notice of Preparation  
&  
Initial Study



**NOTICE OF PREPARATION  
ENVIRONMENTAL IMPACT REPORT  
RIVERBEND PARK**

To: Interested Persons/Agencies

From: Robert Sharkey, Superintendent  
Feather River Recreation & Park District  
1200 Myers Street  
Oroville, CA 95965

The Feather River Recreation and Park District (FRRPD) will be the Lead Agency preparing an Environmental Impact Report (EIR) for the proposed Riverbend Park Project. The project description (including the proposed site plan), and project location (text and illustration) are attached.

The project would create a river oriented park to serve both residents and visitors to the Oroville area. It would provide a connection from the existing bike path to the Oroville Wildlife Area. Riverbend Park would include open space/landscaped areas, picnic areas, an improved boat launch ramp, walking, jogging, and bicycle paths and roads. Buildings to house the Recreation and Natural History Center, Ecology Nature Center and Chamber of Commerce also would be constructed.

Pursuant to state and local guidelines for implementing the California Environmental Quality Act (CEQA), the FRRPD will be the lead agency for the project. An Initial Study was prepared and has determined that an EIR is required for the project. The attached Initial Study has been used to focus the EIR on issues and topics that have potential to create significant impact. The EIR will be inclusive of the various project elements, including construction activities and long-term operation of the facilities, and would focus on the following topics:

- |                               |                              |
|-------------------------------|------------------------------|
| ▪ Aesthetics                  | ▪ Noise                      |
| ▪ Air Quality                 | ▪ Public Services            |
| ▪ Biological Resources        | ▪ Recreation                 |
| ▪ Cultural Resources          | ▪ Transportation/Traffic     |
| ▪ Geology/Soils               | ▪ Utilities/Services Systems |
| ▪ Hazards/Hazardous Materials | ▪ Land Use/Planning          |
| ▪ Hydrology/Water Quality     |                              |

To ensure that the EIR for this project is thorough, adequate, and meets the needs of all agencies reviewing it, we are soliciting comments on specific issues to be included in the environmental review. Comments on the scope of issues to be evaluated in the EIR are also encouraged. Due to time limits mandated by State Law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice

Please submit your written comments no later than \_\_ p.m., \_\_\_\_\_, to:

Robert Sharkey, Superintendent  
Feather River Recreation and Park District (FRRPD)  
1200 Myers Street  
Oroville, CA 95965  
530.533.5062

**Comments by Fax will not be accepted.**

# **RIVERBEND PARK PROJECT**

## **INITIAL STUDY**

### **PROJECT DATA**

**1. Project Title:**

Riverbend Park Project

**2. Lead Agency Name and Address:**

Feather River Recreation and Park District (FRRPD)  
1200 Myers Street  
Oroville, CA 95965

**3. Contact Person and Phone Number**

Robert Sharkey, Superintendent  
Feather River Recreation and Park District (FRRPD)  
(530) 534-8505

**4. Project Location:**

The project site is located within the City of Oroville, in Butte County, California, about 25 miles southeast of the City of Chico. The Feather River borders the project site to both the north and west, while Highway 70 borders the site to the east and Highway 162 borders the site to the south. The attached figure illustrates the project location.

Assessor's Parcel Number(s): APN 035-280-006,011,015,016,017 & 035-290-034 (City of Oroville)

**5. Project Sponsor's Name and Address:**

Feather River Recreation and Park District (FRRPD)  
1200 Myers Street  
Oroville, CA 95965

**6. General Plan Designation:**

The Riverbend Park site is split between the incorporated City of Oroville and Butte County. The northern 58 acres of Riverbend Park is located in the City, whereas the southern 62 acres is located in Butte County.

The Oroville General Plan land use map designates the entire project site as "Parks." The Butte County General Plan Land Use Element designates the southern 62 acres of the subject site as "Public" and the northern 58 acres in the City of Oroville as "Grazing and Open Lands."

**7. Zoning:**

At this time, the property is zoned as (O) for Open Space on the City of Oroville Zoning Map.

**8. Description of Project:**

The proposed project would create a river oriented park to serve both residents and visitors to the Oroville area. It would provide a connection from the existing bike path to the Oroville Wildlife Area. The project would utilize land that has already been disturbed to support leisure and recreation activities. Development of the park would adapt uses to projected flood levels.

Riverbend Park would include open space/landscaped areas, picnic areas, an improved boat launch ramp, walking, jogging, and bicycle paths and roads, a Recreation, Natural History, Chamber of Commerce building, as well as an Ecology building to enhance the visitor experience as well as recreational opportunities provided in the park.

Implementation of the park project would entail revegetation, irrigation, and landscaping activities. Bicycle improvements would be constructed between Highway 70/162 bridges. Parking facilities and public restrooms would be constructed and utilities (water, electricity, and sewer connection) would be extended onto the site. A temporary visitor's facility for the Chamber of Commerce also would be located at the park. Day use facilities would be greatly expanded.

#### **9. Surrounding Land Uses:**

The site is bordered by the Feather River to the north and west, State Highway 70 to the east, and State Highway 162 (Oroville Dam Road and Randy Jennings Memorial Bridge) to the south. Lands to the east are comprised mainly of retail and business services. Lands to the south consist of a 100+ acre park. Lands to the north and west on the opposite side of the Feather River consist of mostly medium-density and some high-density residential developments.

#### **10. Other Public Agencies Whose Approval is Required:**

Permits for the project would be required from the Regional Water Quality Control Board (RWQCB), the Butte County Air Quality Management District (BCAQMD), US Army Corps of Engineers (USACE), Butte County Department of Public Works, City of Oroville Department of Public Works, and the California Department of Fish and Game (CDFG). The project would require all mandatory FRRPD approvals.

#### **11. Environmental Factors Potentially Affected:**

Pursuant to state and local guidelines for implementing the California Environmental Quality Act (CEQA), the Feather River Recreation and Park District (FRRPD) will be the lead agency for the project. The FRRPD has determined that an EIR is required for the project. The EIR will address issues and topics that have the potential to create a significant impact. The environmental factors checked below would be potentially affected by this project, as indicated by the checklist on the following pages.

<input checked="" type="checkbox"/> Aesthetics	Mineral Resources
<input type="checkbox"/> Agricultural Resources	<input checked="" type="checkbox"/> Noise
<input checked="" type="checkbox"/> Air Quality	Population / Housing
<input checked="" type="checkbox"/> Biological Resources	<input checked="" type="checkbox"/> Public Services
<input checked="" type="checkbox"/> Cultural Resources	<input checked="" type="checkbox"/> Recreation
<input checked="" type="checkbox"/> Geology / Soils	<input checked="" type="checkbox"/> Transportation / Traffic
<input checked="" type="checkbox"/> Hazards / Hazardous Materials	<input checked="" type="checkbox"/> Utilities / Service Systems
<input checked="" type="checkbox"/> Hydrology / Water Quality	<input checked="" type="checkbox"/> Land Use / Planning

## DETERMINATION

After due consideration, the Superintendent of the Feather River Recreation and Parks District has found that the proposed project as shown on the attached Figure (Riverbend Park Preferred Master Plan) has the potential for significant impacts on the environment. Therefore, this project will require preparation of an Environmental Impact Report (EIR); which meets the requirements of the California Environmental Quality Act (CEQA).

On the basis of the evaluation in this Initial Study:

- \_\_\_\_\_ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will therefore be prepared.
- \_\_\_\_\_ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will therefore be prepared.
- \_\_\_\_\_ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- \_\_\_\_\_ I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards; and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT (EIR) is required, but it must only analyze the effects that remain to be addressed.
- \_\_\_\_\_ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT (EIR) or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

The above determination is supported by the findings of the attached Initial Study:

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Signature

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Date

# INITIAL STUDY

## ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<b>I. AESTHETICS</b>				
Would the project:				
a. Have a substantial adverse effect on a scenic vista?			X	
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?			X	
c. Substantially degrade the existing visual character or quality of the site and its surroundings?			X	
d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	X			

**Discussion:**

- 1a. The project area has been substantially disturbed by previous dumping and construction activities. Development of the project will change views across the property from highway travelers and into the property from adjacent homeowners. This issue will be addressed in the EIR.
- 1b. The project site is not within view of a designated or eligible scenic highway. It is anticipated that mature trees may need to be removed during construction of the project. The project, however, would result in an increase in the amount of vegetation on the project site. There are no historic buildings on the project site. This issue will be addressed in the EIR.
- 1c. The existing visual character of the project site is dominated by the gravel mounds interspersed with vegetation. The project will change the visual character of the site by adding vegetation and turf areas throughout in combination with native grasses and other vegetation. The project site after development will appear more like an urban park, and will most likely improve the visual quality of the site. This issue will be addressed in the EIR.

- 1d. The project will introduce additional lighting and new facilities onto the site that will change the visual relationships of the site to the surrounding landscape. Lighting must be controlled in a manner that will not adversely affect sensitive receptors while providing security. This issue will be addressed in the EIR.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<b>2. AGRICULTURE RESOURCES:</b>				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				<b>X</b>
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?				<b>X</b>
c. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland, to non-agricultural use?				<b>X</b>

**Discussion:**

- 2a. The California Department of Conservation's (CDC) Farmland Mapping and Monitoring Program designates important farmland in California. The project area is not mapped as "Farmland" on the CDC's Important Farmland Map. Additionally, the project is located on existing parkland and would not convert farmland to non-agricultural use. Therefore, this issue will not be addressed in the EIR.



- 2b. The project site is not zoned for agricultural use. There are no existing Williamson Act contracts. This issue will not be addressed in the EIR.
- 2c. The project does not involve other changes in the existing environment that would result in conversion of farmland to non-agricultural use because these uses are not thought to occur on or in close proximity to the project area. The EIR will not include further analysis on this issue.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<b>3. AIR QUALITY:</b>				
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?			X	
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	X			
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?			X	
d. Expose sensitive receptors to substantial pollutant concentrations?	X			
e. Create objectionable odors affecting a substantial number of people?			X	

**Discussion:**

- 3a. The project will generate air pollutants during construction. It is not anticipated that this activity would conflict with or obstruct implementation of the applicable air quality plan. Implementing the Civic Park Master Plan would expand existing public and recreational land uses in the park, but would not introduce additional population through large-scale commercial or residential construction. This issue will be addressed in the EIR.
- 3b. The increased traffic accessing the site and vehicles idling while loading boats into the river will increase air emissions from the project site. Construction of the project will increase air emissions and generation of dust from the project site. Construction emissions will be generated by the construction equipment and grading activities that will be undertaken to construct the park. This issue will be addressed in the EIR.
- 3c. As noted in 3a, it is not anticipated that the project will generate emissions that would conflict with the applicable air quality plan. Due to the overall small size of the project, a cumulatively considerable net increase in pollutants is not expected. However, this issue will be addressed in the EIR.
- 3d. The residential land uses across the river from the project site are the only sensitive receptors in the project area. Construction-related emissions could affect these sensitive receptors. This issue will be addressed in the EIR.
- 3e. No objectionable odors are expected to result from the construction or operation of the land uses envisioned by the Riverbend Park project. Land uses would include park use, and community facility uses, which are not associated with objectionable odors. This issue will be addressed in the EIR.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<b>4. BIOLOGICAL RESOURCES:</b>				
Would the project:				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?	X			
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulation, or by the California Department of Fish and Game or US Fish and Wildlife Service?	X			
c. Have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	X			
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	X			
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	X			

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan?	X			

**Discussion:**

4a – 4f. Development of the project may create additional habitat for upland species and alter the aquatic habitat either through construction along the riverbank or through alteration of the riverbank. The species and habitat have not been mapped and recorded so that the quality of the biological environment cannot yet be determined. Impacts to biological resources will be evaluated in the EIR.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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**5. CULTURAL RESOURCES:**

Would the project:

a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?			X	
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	X			
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	X			
d. Disturb any human remains, including those interred outside of formal cemeteries?			X	

**Discussion:**

5a. The only potentially significant resource identified near the project is the former railroad crossing located off-site. Project development could indirectly affect this resource through grading and revegetation activities, and will be addressed in the EIR.

- 5b. The project site has not been surveyed for archaeological resources nor has a record search been conducted. Should these activities not identify any significant archaeological resources, there is always a chance that such resources may become apparent once vegetation is removed or during construction excavation. Indicators of prehistoric site activity include charcoal, obsidian or chert flakes, grinding bowls, shell fragments, bone, and pockets of dark friable soils. A site survey and records search will be conducted as part of the EIR.
- 5c. The site has no known paleontological resources or unique geologic features that would suggest the presence of these resources, yet this will be further examined in the EIR.
- 5d. The site has no known human remains, including those interred outside of formal cemeteries. However, it is impossible to be sure about the presence or absence of human remains on a site until site excavation and grading occurs. This issue will be addressed in the EIR.

	<b>Potentially Significant Impact</b>	<b>Less Than Significant with Mitigation Incorporated</b>	<b>Less than Significant Impact</b>	<b>No Impact</b>
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## 6. GEOLOGY / SOILS:

Would the project:

- a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
- Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.
  - Strong seismic ground shaking?
  - Seismic-related ground failure, including liquefaction?
  - Landslides?
- b. Result in substantial soil erosion or the loss of topsoil?

**X**

**X**

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	X			
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	X			
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	X			

#### Discussion:

- 6a. It is possible that the project may be located in a seismically active area or in an Alquist-Priolo Fault Zone. Strong ground shaking could occur at this site during a major earthquake, and therefore this issue will be examined in the EIR.
- 6b. New construction activities could expose soils to wind and rain, which could result in accelerated erosion. Development of the site would involve increasing topsoil and vegetation in the area and planting turf and natural grasses throughout the site. These vegetative elements would reduce the likelihood of soil erosion, yet this issue will be further examined in the EIR.
- 6c. The soil characteristics of the site have not yet been identified. Because of the high water table, it can be inferred that soils could be unstable and subject to lateral spreading and liquefaction. The project does not propose subsurface development, although the utility pipes would be routed underground. This issue will be addressed in the EIR.
- 6d. There may be moderately expansive soils on the site due to the high groundwater table and the use of fill materials over much of the site. The effects of expansive soils can be reduced by close adherence to the provisions of the UBC and the implementation of foundation recommendations provided by a civil engineer and project-specific engineering requirements that would be developed during the building permit process. This issue will be addressed in the EIR.

- 6e. Development of Riverbend Park does not propose the use of septic tanks. Alternative wastewater disposal systems will be utilized in the southern most toilet, and therefore this issue will be addressed in the EIR.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<b>7. HAZARDS / HAZARDOUS MATERIALS:</b>				
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?		X		
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		X		
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	X			

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?			X	
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	X			

#### Discussion:

- 7a/b. Development of Riverbend Park would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials as no unusual use of hazardous materials is anticipated. Use of hazardous materials, as defined and regulated through the California Code of Regulations, would be limited to the periodic use of pesticides and herbicides in conjunction with maintenance of the landscaping. This issue will be addressed in the EIR.
- 7c. The project site is not within one-quarter mile of an existing or proposed school and therefore this issue will not be addressed in the EIR.
- 7d. An environmental records search will be performed to determine if there were properties within the project area that are included on a list of hazardous materials sites (compiled pursuant to Government Code Section 65962.5) which could create a significant hazard to the public or the environment. The use of the project site as a dumping area may result in areas of contaminated materials, and therefore this issue will be fully examined in the EIR.



- 7e. Riverbend Park is located within two miles of the Oroville Airport and therefore this issue will be addressed in the EIR, yet no hazards due to the airport are expected at the project site.
- 7f. The project site is not located in the vicinity of a private airstrip. This issue will not be addressed in the EIR.
- 7g. Development of the park would not impair or interfere with the implementation of these plans and procedures, as existing roadways surrounding the park would remain in use, and paved vehicular access to the inner-park would continue to be provided. Seeing as the final emergency plan is not yet completed for the project site, this issue will be further analyzed in the EIR.
- 7h. Development of the park would generate greater public use and higher numbers of people would use the park for picnics and other recreation activities. The proximity of the densely vegetated wildlife area to the park could pose a potential fire hazard to the park and adjacent developments and therefore this issue will be further examined in the EIR.

<b>Potentially Significant Impact</b>	<b>Less Than Significant with Mitigation Incorporated</b>	<b>Less than Significant Impact</b>	<b>No Impact</b>
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## 8. HYDROLOGY / WATER QUALITY:

Would the project:

- |   |          |
|---|----------|
| a. Violate any water quality standards or waste discharge requirements?   | <b>X</b> |
| b. Create or contribute runoff water that would provide substantial additional sources of polluted runoff or otherwise substantially degrade water quality? | <b>X</b> |

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	X			
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	X			
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems?	X			
f. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	X			
g. Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h. Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	X			

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	X			
j. Expose people or structures to inundation by seiche, tsunami, or mudflow?				X

### Discussion:

- 8a. The development of the park could increase water pollutants into the river. This issue will be analyzed in the EIR.
- 8b. Please refer to response 8a.
- 8c. The effect upon groundwater would be dependent upon the proposed system of irrigation and source of water for irrigation of the park. This issue will be addressed in the EIR.
- 8d. The development of the park will substantially alter the existing drainage pattern of the site through recontouring the site, introducing vegetation and additional paving to the area. Some alteration to the river edge may be undertaken to expand the boat launching area. Due to the high amount of changes possible, this issue will be analyzed further in the EIR.
- 8e. The project would increase the amount of impervious surface in the area and could therefore increase stormwater runoff volumes, therefore this issue will be addressed in the EIR.
- 8f. Please see response 8d.
- 8g. The majority of the project area is located within a 100-year flood zone. However, the proposed project does not include the development of housing and, therefore, would not result in flooding impacts to new housing and will not be analyzed further in the EIR.
- 8h. The majority of the project area is located within a 100-year flood zone. Development of the site would include structures as well as picnic areas along the edge of the river. Introduction of new structures on the site could impede or redirect flood flows and will therefore require further analysis in the EIR.
- 8i. The project is downstream from an existing dam. In the event of dam failure the project site would be catastrophically flooded and therefore additional analysis is required in the EIR.
- 8j. There could be a potential for inundation from dam failure on the project site due to seiche in Lake Oroville, and therefore further analysis will be completed in the EIR.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<b>9. LAND USE AND PLANNING:</b>				
Would the project:				
a. Physically divide an established community?			X	
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	X			
c. Conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan?	X			

**Discussion:**

- 9a. The proposed Riverbend Park would not physically divide an established community. The park is compatible with surrounding land uses and would maintain existing park use. The park would enhance pedestrian connections, improve parking, and increase vegetation on the site. A complete analysis of the surrounding land uses will be included in the EIR.
- 9b. The relationship of the project to existing plans and policies has not yet been determined. This issue will be addressed in the EIR.
- 9c. The relationship of the project to existing Habitat Conservation Plans or Natural Conservation Plans has not yet been determined. This issue will be addressed in the EIR.

Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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## 10. MINERAL RESOURCES:

Would the project:

- |   |  |  |  |  |   |
|---|--|--|--|--|---|
| a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?                                |  |  |  |  | X |
| b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? |  |  |  |  | X |

### Discussion:

- 10a. The project area is not known to contain any mineral resources that are important to the region or the State. In addition, substantial excavation is not anticipated, which could result in the loss of mineral resources, should they exist. Thus, no impacts to mineral resources would occur from project implementation.
- 10b. The project site is not delineated as a locally important mineral resource recovery site.

Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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## 11. NOISE:

Would the project result in:

- |   |  |  |  |  |   |
|---|--|--|--|--|---|
| a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? |  |  |  |  | X |
|---|--|--|--|--|---|

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
c. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	X	X		
d. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	X			
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?			X	
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X

#### Discussion:

- 11a. Additional traffic trips could be generated by the expanded development of the park. Noise generation would primarily occur as vehicles arrived and departed from the park. Construction noise would be temporary and would include noise from activities such as site preparation, truck hauling of material, and building construction. Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., demolition/land clearing, grading and excavation, erection). Both permanent as well as construction noise will be addressed in the EIR.
- 11b. Uses proposed for the site are generally the same as uses currently within the park. The exception would be the proposed commercial concessions. Noise from these uses would include car door slams, tire squeals, and possible garage exhaust fans. Single event noises would tend to blend into the other ambient noise except for the louder slams and squeals, which would be more clearly audible. This issue will be addressed in the EIR.
- 11c. Please refer to response 11a.

- 11d. Development of the park would not generate excessive groundborne vibration or groundborne noise levels. No activities associated with the park would create these nuisances. Construction would not require blasting, pile driving, or other substantial forms of ground vibration. This issue will be discussed in the EIR.
- 11e. The project site is located within two miles of a public use airport and will therefore be analyzed further in the EIR, yet there are no expected noise attributes of the project that would affect the use of the airport.
- 11f. The project area is not located within the vicinity of a private airstrip.

<b>Potentially Significant Impact</b>	<b>Less Than Significant with Mitigation Incorporated</b>	<b>Less than Significant Impact</b>	<b>No Impact</b>
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## 12. POPULATION / HOUSING:

Would the project:

- |   |          |
|---|----------|
| a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | <b>X</b> |
| b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?   | <b>X</b> |
| c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?   | <b>X</b> |

### Discussion:

- 12a. The Riverbend Park project would not create population generating land uses such as new homes or businesses. Expansions of existing parking facilities, increasing vegetation and bike paths are the primary development components of the park plan. Infrastructure would be provided to serve the proposed recreational uses. These development activities would not directly or indirectly induce population growth. The improvements considered under the project are intended to serve the existing population of Oroville.
- 12b. No displacement of existing housing or people is proposed as part of the project.
- 12c. Refer to response 12b.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<b>13. PUBLIC SERVICES:</b>				
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a. Fire protection?			X	
b. Police protection?			X	
c. Schools?				X
d. Parks?				X
e. Other public facilities?				X

**Discussion:**

13a/b. The development of Riverbend Park will increase the use of the project site and therefore has the possibility to increase the need for fire and police services as will be described in the EIR.

13c. The creation of Riverbend Park would not introduce additional population into Oroville and therefore would not generate the need for new schools.

13d. The project would construct a new park in the City of Oroville. It would not generate the need for additional parks, but rather expand existing park facilities in the area.

13e. Other public facilities would not be required.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<b>14. RECREATION:</b>				
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			X	
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	X			

**Discussion:**

- 14a. The development of Riverbend Park would expand an existing public park in the City of Oroville. The proposed park improvements could result in increased use of the park by local residents. The impacts of the expanded park facilities on the existing and surrounding land uses will be evaluated in the EIR.
- 14b. The potential environmental impacts related to the construction of the recreation facilities proposed by the project will be evaluated in the EIR.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<b>15. TRANSPORTATION / TRAFFIC:</b>				
Would the project:				
a. Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	X			

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?			X	
c. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			X	
d. Result in inadequate emergency access?			X	
e. Result in inadequate parking capacity?			X	
f. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?			X	
g. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X

**Discussion:**

- 15a. The project would result in an increase in traffic in relation to existing traffic load and capacity. This issue will be analyzed further in the EIR.
- 15b. The relationship of the project-generated traffic to the regional transportation plan has not yet been determined. The increased trips generated by the project are not expected to affect the travel times or travel speeds along the highway and local roadways. This issue will be addressed in the EIR.
- 15c. The project does not introduce sharp curves or dangerous intersections on the project site. It seeks to improve pedestrian safety and walkability of the area by improving the pedestrian pathway system, providing expanded on-site parking and recreational uses, and locating surface parking areas near group recreation areas. The EIR will evaluate the potential for increased safety hazards.

- 15d. Emergency access would be improved by the paving and expanded parking provided by the project. The paved access roads could be used by emergency vehicles to access the project site and parking areas have been sized to allow emergency vehicle turnaround. Emergency access will be discussed in the EIR.
- 15e. The project proposes several parking areas to serve boating and other visitor use. The relationship of parking supply and demand will be discussed in the EIR.
- 15f. The proposed project would encourage the use of forms of transportation other than the automobile by providing additional extensions to the existing bike trail and enhancing the pedestrian amenities at the site. This issue will be addressed in the EIR.
- 15g. The proposed project would not affect air traffic patterns.

Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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## 16. UTILITIES / SERVICE SYSTEMS:

Would the project:

- |  |   |   |  |
|--|---|---|--|
| a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?  | X |   |  |
| b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | X |   |  |
| c. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?   | X |   |  |
| d. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?          |   | X |  |

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e. Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	X			
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	X			
g. Comply with Federal, state, and local statutes and regulations related to solid waste?			X	

**Discussion:**

- 16a. The proposed project would require the expansion of water, sewer and wastewater lines onto the site. The impacts will be evaluated in the EIR.
- 16b. The project by itself is not expected to require an expansion of the existing wastewater treatment facilities in the City of Oroville. This issue, however, will be evaluated in the EIR.
- 16c. The amount of water required at the project site is not yet known and therefore this issue will be discussed further in the EIR.
- 16d. The proposed expansion of the parking facilities would increase the area of impervious surfaces and associated stormwater runoff. The majority of the park would remain unpaved open space for use as passive and active recreation. Thus, no new storm drainage facilities would be required. The park would generate increased refuse.
- 16e. The amount of wastewater produced from the project site will be analyzed in relation to the capacity of the existing wastewater treatment plant. This issue will be addressed in the EIR.
- 16f. The project's solid waste disposal needs are not currently known, and will be evaluated in the EIR.
- 16g. There are no unusual project circumstances or conditions that result in an expectation that the project would not comply with Federal, State, and local statutes and regulations related to solid waste. However, a final analysis of the project development will be included in the EIR to assure compliance.

## **Appendix B:**

Suggested Native Plants

&

U.S. Department of Interior: Guidelines for the Valley Elderberry Longhorn Beetle



## SUGGESTED NATIVE PLANT SPECIES LIST FOR RIVERBEND PARK, CITY OF OROVILLE

### **Tall deciduous trees – river edge and above the edge**

Fremont cottonwood (*Populus fremontii*)

Red willow (*Salix laevigata*)

Yellow willow (*Salix lucida* ssp. *lasiandra*)

Western sycamore (*Platanus racemosa*)

Big-leaved maple (*Acer macrophyllum*)

Box elder (*Acer negundo* var. *californicum*)

### **Short deciduous tree for screen planting – river edge and above the edge**

Arroyo willow (*Salix lasiolepis*)

### **Tall deciduous tree – above the river edge**

Valley oak (*Quercus lobata*)

### **Mid-size evergreen tree for above the river edge**

Interior live oak (*Quercus wislizenii*)

### **Habitat plant – above the river edge**

Blue elderberry (*Sambucus mexicana*)

### **Shrubs – above the river edge**

Deerbrush (*Ceanothus integerrimus*)

Mock orange (*Philadelphus lewisii*)

Choke cherry (*Prunus virginiana* ssp. *demissa*)

Hoary coffeeberry (*Rhamnus tomentella* ssp. *tomentella*)

California rose (*Rosa californica*)

Snowberry (*Symphoricarpos albus*)

# **United States Department of the Interior**

## **Fish and Wildlife Service**

**Sacramento Fish and Wildlife Office**

**2800 Cottage Way, Room W-2605**

**Sacramento, California 95825**

### **Conservation Guidelines for the Valley Elderberry Longhorn Beetle**

**Revised July 9, 1999**

The following guidelines have been issued by the U.S. Fish and Wildlife Service (Service) to assist Federal agencies and non-federal project applicants needing incidental take authorization through a section 7 consultation or a section 10(a)(1)(B) permit in developing measures to avoid and minimize adverse effects on the valley elderberry longhorn beetle. The Service will revise these guidelines as needed in the future. The most recently issued version of these guidelines should be used in developing all projects and habitat restoration plans. The survey and monitoring procedures described below are designed to avoid any adverse effects to the valley elderberry longhorn beetle. Thus a recovery permit is not needed to survey for the beetle or its habitat or to monitor conservation areas. If you are interested in a recovery permit for research purposes please call the Service's Regional Office at (503) 231-2063.

#### **Background Information**

The valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), was listed as a threatened species on August 8, 1980 (Federal Register 45: 52803-52807). This animal is fully protected under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). The valley elderberry longhorn beetle (beetle) is completely dependent on its host plant, elderberry (*Sambucus* species), which is a common component of the remaining riparian forests and adjacent upland habitats of California's Central Valley. Use of the elderberry by the beetle, a wood borer, is rarely apparent. Frequently, the only exterior evidence of the elderberry's use by the beetle is an exit hole created by the larva just prior to the pupal stage. The life cycle takes one or two years to complete. The animal spends most of its life in the larval stage, living within the stems of an elderberry plant. Adult emergence is from late March through June, about the same time the elderberry produces flowers. The adult stage is short-lived. Further information on the life history, ecology, behavior, and distribution of the beetle can be found in a report by Barr (1991) and the recovery plan for the beetle (USFWS 1984).

#### **Surveys**

Proposed project sites within the range of the valley elderberry longhorn beetle should be surveyed for the presence of the beetle and its elderberry host plant by a qualified biologist. The beetle's range extends throughout California's Central Valley and associated foothills from about the 3,000-foot elevation contour on the east and the watershed of the Central Valley on the west (Figure 1). All or portions of 31 counties are



included: Alameda, Amador, Butte, Calaveras, Colusa, Contra Costa, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Madera, Mariposa, Merced, Napa, Nevada, Placer, Sacramento, San Benito, San Joaquin, San Luis Obispo, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba.

If elderberry plants with one or more stems measuring 1.0 inch or greater in diameter at ground level occur on or adjacent to the proposed project site, or are otherwise located where they may be directly or indirectly affected by the proposed action, minimization measures which include planting replacement habitat (conservation planting) are required (Table 1).

All elderberry shrubs with one or more stems measuring 1.0 inch or greater in diameter at ground level that occur on or adjacent to a proposed project site must be thoroughly searched for beetle exit holes (external evidence of beetle presence). In addition, all elderberry stems one inch or greater in diameter at ground level must be tallied by diameter size class (Table 1). As outlined in Table 1, the numbers of elderberry seedlings/cuttings and associated riparian native trees/shrubs to be planted as replacement habitat are determined by stem size class of affected elderberry shrubs, presence or absence of exit holes, and whether a proposed project lies in a riparian or non-riparian area.

Elderberry plants with no stems measuring 1.0 inch or greater in diameter at ground level are unlikely to be habitat for the beetle because of their small size and/or immaturity. Therefore, no minimization measures are required for removal of elderberry plants with no stems measuring 1.0 inch or greater in diameter at ground level with no exit holes. Surveys are valid for a period of two years.

### **Avoid and Protect Habitat Whenever Possible**

Project sites that do not contain beetle habitat are preferred. If suitable habitat for the beetle occurs on the project site, or within close proximity where beetles will be affected by the project, these areas must be designated as avoidance areas and must be protected from disturbance during the construction and operation of the project. When possible, projects should be designed such that avoidance areas are connected with adjacent habitat to prevent fragmentation and isolation of beetle populations. Any beetle habitat that cannot be avoided as described below should be considered impacted and appropriate minimization measures should be proposed as described below.

### **Avoidance: Establishment and Maintenance of a Buffer Zone**

Complete avoidance (i.e., no adverse effects) may be assumed when a 100-foot (or wider) buffer is established and maintained around elderberry plants containing stems measuring 1.0 inch or greater in diameter at ground level. Firebreaks may not be included in the buffer zone. In buffer areas construction-related disturbance should be minimized, and any damaged area should be promptly restored following construction. The Service must be consulted before any disturbances within the buffer area are considered. In addition,

the Service must be provided with a map identifying the avoidance area and written details describing avoidance measures.

### **Protective Measures**

1. Fence and flag all areas to be avoided during construction activities. In areas where encroachment on the 100-foot buffer has been approved by the Service, provide a minimum setback of at least 20 feet from the dripline of each elderberry plant.
2. Brief contractors on the need to avoid damaging the elderberry plants and the possible penalties for not complying with these requirements.
3. Erect signs every 50 feet along the edge of the avoidance area with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be clearly readable from a distance of 20 feet, and must be maintained for the duration of construction.
4. Instruct work crews about the status of the beetle and the need to protect its elderberry host plant.

### **Restoration and Maintenance**

Restore any damage done to the buffer area (area within 100 feet of elderberry plants) during construction. Provide erosion control and re-vegetate with appropriate native plants.

Buffer areas must continue to be protected after construction from adverse effects of the project. Measures such as fencing, signs, weeding, and trash removal are usually appropriate.

No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant should be used in the buffer areas, or within 100 feet of any elderberry plant with one or more stems measuring 1.0 inch or greater in diameter at ground level.

The applicant must provide a written description of how the buffer areas are to be restored, protected, and maintained after construction is completed.

Mowing of grasses/ground cover may occur from July through April to reduce fire hazard. No mowing should occur within five (5) feet of elderberry plant stems. Mowing must be done in a manner that avoids damaging plants (e.g., stripping away bark through careless use of mowing/trimming equipment).

## **Transplant Elderberry Plants That Cannot Be Avoided**

Elderberry plants must be transplanted if they can not be avoided by the proposed project. All elderberry plants with one or more stems measuring 1.0 inch or greater in diameter at ground level must be transplanted to a conservation area (see below). At the Service's discretion, a plant that is unlikely to survive transplantation because of poor condition or location, or a plant that would be extremely difficult to move because of access problems, may be exempted from transplantation. In cases where transplantation is not possible the minimization ratios in Table 1 may be increased to offset the additional habitat loss.

Trimming of elderberry plants (e.g., pruning along roadways, bike paths, or trails) with one or more stems 1.0 inch or greater in diameter at ground level, may result in take of beetles. Therefore, trimming is subject to appropriate minimization measures as outlined in Table 1.

1. Monitor. A qualified biologist (monitor) must be on-site for the duration of the transplanting of the elderberry plants to insure that no unauthorized take of the valley elderberry longhorn beetle occurs. If unauthorized take occurs, the monitor must have the authority to stop work until corrective measures have been completed. The monitor must immediately report any unauthorized take of the beetle or its habitat to the Service and to the California Department of Fish and Game.

2. Timing. Transplant elderberry plants when the plants are dormant, approximately November through the first two weeks in February, after they have lost their leaves. Transplanting during the non-growing season will reduce shock to the plant and increase transplantation success.

3. Transplanting Procedure.

a. Cut the plant back 3 to 6 feet from the ground or to 50 percent of its height (whichever is taller) by removing branches and stems above this height. The trunk and all stems measuring 1.0 inch or greater in diameter at ground level should be replanted. Any leaves remaining on the plant should be removed.

b. Excavate a hole of adequate size to receive the transplant.

c. Excavate the plant using a Vemeer spade, backhoe, front end loader, or other suitable equipment, taking as much of the root ball as possible, and replant immediately at the conservation area. Move the plant only by the root ball. If the plant is to be moved and transplanted off site, secure the root ball with wire and wrap it with burlap. Dampen the burlap with water, as necessary, to keep the root ball wet. Do not let the roots dry out. Care should be taken to ensure that the soil is not dislodged from around the roots of the transplant. If the site receiving the transplant does not have adequate soil moisture, pre-wet the soil a day or two before transplantation.

d. The planting area must be at least 1,800 square feet for each elderberry transplant. The root ball should be planted so that its top is level with the existing ground. Compact the soil sufficiently so that settlement does not occur. As many as five (5) additional elderberry plantings (cuttings or seedlings) and up to five (5) associated native species plantings (see below) may also be planted within the 1,800 square foot area with the transplant. The transplant and each new planting should have its own watering basin measuring at least three (3) feet in diameter. Watering basins should have a continuous berm measuring approximately eight (8) inches wide at the base and six (6) inches high.

e. Saturate the soil with water. Do not use fertilizers or other supplements or paint the tips of stems with pruning substances, as the effects of these compounds on the beetle are unknown.

f. Monitor to ascertain if additional watering is necessary. If the soil is sandy and well-drained, plants may need to be watered weekly or twice monthly. If the soil is clayey and poorly-drained, it may not be necessary to water after the initial saturation. However, most transplants require watering through the first summer. A drip watering system and timer is ideal. However, in situations where this is not possible, a water truck or other apparatus may be used.

### **Plant Additional Seedlings or Cuttings**

Each elderberry stem measuring 1.0 inch or greater in diameter at ground level that is adversely affected (i.e., transplanted or destroyed) must be replaced, in the conservation area, with elderberry seedlings or cuttings at a ratio ranging from 1:1 to 8:1 (new plantings to affected stems). Minimization ratios are listed and explained in Table 1. Stock of either seedlings or cuttings should be obtained from local sources. Cuttings may be obtained from the plants to be transplanted if the project site is in the vicinity of the conservation area. If the Service determines that the elderberry plants on the proposed project site are unsuitable candidates for transplanting, the Service may allow the applicant to plant seedlings or cuttings at higher than the stated ratios in Table 1 for each elderberry plant that cannot be transplanted.

### **Plant Associated Native Species**

Studies have found that the beetle is more abundant in dense native plant communities with a mature overstory and a mixed understory. Therefore, a mix of native plants associated with the elderberry plants at the project site or similar sites will be planted at ratios ranging from 1:1 to 2:1 [native tree/plant species to each elderberry seedling or cutting (see Table 1)]. These native plantings must be monitored with the same survival criteria used for the elderberry seedlings (see below). Stock of saplings, cuttings, and seedlings should be obtained from local sources. If the parent stock is obtained from a distance greater than one mile from the conservation area, approval by the Service of the native plant donor sites must be obtained prior to initiation of the revegetation work. Planting or seeding the conservation area with native herbaceous species is encouraged. Establishing native grasses and forbs may discourage unwanted non-native species from

becoming established or persisting at the conservation area. Only stock from local sources should be used.

## **Examples**

### **Example 1**

The project will adversely affect beetle habitat on a vacant lot on the land side of a river levee. This levee now separates beetle habitat on the vacant lot from extant Great Valley Mixed Riparian Forest (Holland 1986) adjacent to the river. However, it is clear that the beetle habitat located on the vacant lot was part of a more extensive mixed riparian forest ecosystem extending farther from the river's edge prior to agricultural development and levee construction. Therefore, the beetle habitat on site is considered riparian. A total of two elderberry plants with at least one stem measuring 1.0 inch or greater in diameter at ground level will be affected by the proposed action. The two plants have a total of 15 stems measuring over 1.0 inch. No exit holes were found on either plant. Ten of the stems are between 1.0 and 3.0 inches in diameter and five of the stems are greater than 5.0 inches in diameter. The conservation area is suited for riparian forest habitat. Associated natives adjacent to the conservation area are box elder (*Acer negundo californica*), walnut (*Juglans californica* var. *hindsii*), sycamore (*Platanus racemosa*), cottonwood (*Populus fremontii*), willow (*Salix gooddingii* and *S. laevigata*), white alder (*Alnus rhombifolia*), ash (*Fraxinus latifolia*), button willow (*Cephalanthus occidentalis*), and wild grape (*Vitis californica*).

Minimization (based on ratios in Table 1):

- Transplant the two elderberry plants that will be affected to the conservation area.
- Plant 40 elderberry rooted cuttings (10 affected stems compensated at 2:1 ratio and 5 affected stems compensated at 4:1 ratio, cuttings planted:stems affected)
- Plant 40 associated native species (ratio of associated natives to elderberry plantings is 1:1 in areas with no exit holes):

5 saplings each of box elder, sycamore, and cottonwood

5 willow seedlings

5 white alder seedlings

5 saplings each of walnut and ash

3 California button willow

2 wild grape vines

Total: 40 associated native species

- Total area required is a minimum of 1,800 sq. ft. for one to five elderberry seedlings and up to 5 associated natives. Since, a total of 80 plants must be planted (40 elderberries and 40 associated natives), a total of 0.33 acre (14,400 square feet) will be required for conservation plantings. The conservation area will be seeded and planted with native grasses and forbs, and closely monitored and maintained throughout the monitoring period.

## **Example 2**

The project will adversely affect beetle habitat in Blue Oak Woodland (Holland 1986). One elderberry plant with at least one stem measuring 1.0 inch or greater in diameter at ground level will be affected by the proposed action. The plant has a total of 10 stems measuring over 1.0 inch. Exit holes were found on the plant. Five of the stems are between 1.0 and 3.0 inches in diameter and five of the stems are between 3.0 and 5.0 inches in diameter. The conservation area is suited for elderberry savanna (non-riparian habitat). Associated natives adjacent to the conservation area are willow (*Salix* species), blue oak (*Quercus douglasii*), interior live oak (*Q. wislizenii*), sycamore, poison oak (*Toxicodendron diversilobum*), and wild grape.

Minimization (based on ratios in Table 1):

- Transplant the one elderberry plant that will be affected to the conservation area.
- Plant 30 elderberry seedlings (5 affected stems compensated at 2:1 ratio and 5 affected stems compensated at 4:1 ratio, cuttings planted:stems affected)
- Plant 60 associated native species (ratio of associated natives to elderberry plantings is 2:1 in areas with exit holes):

20 saplings of blue oak, 20 saplings of sycamore, and 20 saplings of willow, and seed and plant with a mixture of native grasses and forbs

- Total area required is a minimum of 1,800 sq. ft. for one to five elderberry seedlings and up to 5 associated natives. Since, a total of 90 plants must be planted (30 elderberries and 60 associated natives), a total of 0.37 acre (16,200 square feet) will be required for conservation plantings. The conservation area will be seeded and planted with native grasses and forbs, and closely monitored and maintained throughout the monitoring period.

## **Conservation Area—Provide Habitat for the Beetle in Perpetuity**

The conservation area is distinct from the avoidance area (though the two may adjoin), and serves to receive and protect the transplanted elderberry plants and the elderberry and

other native plantings. The Service may accept proposals for off-site conservation areas where appropriate.

1. Size. The conservation area must provide at least 1,800 square feet for each transplanted elderberry plant. As many as 10 conservation plantings (i.e., elderberry cuttings or seedlings and/or associated native plants) may be planted within the 1800 square foot area with each transplanted elderberry. An additional 1,800 square feet shall be provided for every additional 10 conservation plants. Each planting should have its own watering basin measuring approximately three feet in diameter. Watering basins should be constructed with a continuous berm measuring approximately eight inches wide at the base and six inches high.

The planting density specified above is primarily for riparian forest habitats or other habitats with naturally dense cover. If the conservation area is an open habitat (i.e., elderberry savanna, oak woodland) more area may be needed for the required plantings. Contact the Service for assistance if the above planting recommendations are not appropriate for the proposed conservation area.

No area to be maintained as a firebreak may be counted as conservation area. Like the avoidance area, the conservation area should connect with adjacent habitat wherever possible, to prevent isolation of beetle populations.

Depending on adjacent land use, a buffer area may also be needed between the conservation area and the adjacent lands. For example, herbicides and pesticides are often used on orchards or vineyards. These chemicals may drift or runoff onto the conservation area if an adequate buffer area is not provided.

2. Long-Term Protection. The conservation area must be protected in perpetuity as habitat for the valley elderberry longhorn beetle. A conservation easement or deed restrictions to protect the conservation area must be arranged. Conservation areas may be transferred to a resource agency or appropriate private organization for long-term management. The Service must be provided with a map and written details identifying the conservation area; and the applicant must receive approval from the Service that the conservation area is acceptable prior to initiating the conservation program. A true, recorded copy of the deed transfer, conservation easement, or deed restrictions protecting the conservation area in perpetuity must be provided to the Service before project implementation.

Adequate funds must be provided to ensure that the conservation area is managed in perpetuity. The applicant must dedicate an endowment fund for this purpose, and designate the party or entity that will be responsible for long-term management of the conservation area. The Service must be provided with written documentation that funding and management of the conservation area (items 3-8 above) will be provided in perpetuity.

3. Weed Control. Weeds and other plants that are not native to the conservation area must be removed at least once a year, or at the discretion of the Service and the California Department of Fish and Game. Mechanical means should be used; herbicides are prohibited unless approved by the Service.

4. Pesticide and Toxicant Control. Measures must be taken to insure that no pesticides, herbicides, fertilizers, or other chemical agents enter the conservation area. No spraying of these agents must be done within one 100 feet of the area, or if they have the potential to drift, flow, or be washed into the area in the opinion of biologists or law enforcement personnel from the Service or the California Department of Fish and Game.

5. Litter Control. No dumping of trash or other material may occur within the conservation area. Any trash or other foreign material found deposited within the conservation area must be removed within 10 working days of discovery.

6. Fencing. Permanent fencing must be placed completely around the conservation area to prevent unauthorized entry by off-road vehicles, equestrians, and other parties that might damage or destroy the habitat of the beetle, unless approved by the Service. The applicant must receive written approval from the Service that the fencing is acceptable prior to initiation of the conservation program. The fence must be maintained in perpetuity, and must be repaired/replaced within 10 working days if it is found to be damaged. Some conservation areas may be made available to the public for appropriate recreational and educational opportunities with written approval from the Service. In these cases appropriate fencing and signs informing the public of the beetle's threatened status and its natural history and ecology should be used and maintained in perpetuity.

7. Signs. A minimum of two prominent signs must be placed and maintained in perpetuity at the conservation area, unless otherwise approved by the Service. The signs should note that the site is habitat of the federally threatened valley elderberry longhorn beetle and, if appropriate, include information on the beetle's natural history and ecology. The signs must be approved by the Service. The signs must be repaired or replaced within 10 working days if they are found to be damaged or destroyed.

### **Monitoring**

The population of valley elderberry longhorn beetles, the general condition of the conservation area, and the condition of the elderberry and associated native plantings in the conservation area must be monitored over a period of either ten (10) consecutive years or for seven (7) years over a 15-year period. The applicant may elect either 10 years of monitoring, with surveys and reports every year; or 15 years of monitoring, with surveys and reports on years 1, 2, 3, 5, 7, 10, and 15. The conservation plan provided by the applicant must state which monitoring schedule will be followed. No change in monitoring schedule will be accepted after the project is initiated. If conservation planting is done in stages (i.e., not all planting is implemented in the same time period), each stage of conservation planting will have a different start date for the required monitoring time.



Surveys. In any survey year, a minimum of two site visits between February 14 and June 30 of each year must be made by a qualified biologist. Surveys must include:

1. A population census of the adult beetles, including the number of beetles observed, their condition, behavior, and their precise locations. Visual counts must be used; mark-recapture or other methods involving handling or harassment must not be used.
2. A census of beetle exit holes in elderberry stems, noting their precise locations and estimated ages.
3. An evaluation of the elderberry plants and associated native plants on the site, and on the conservation area, if disjunct, including the number of plants, their size and condition.
4. An evaluation of the adequacy of the fencing, signs, and weed control efforts in the avoidance and conservation areas.
5. A general assessment of the habitat, including any real or potential threats to the beetle and its host plants, such as erosion, fire, excessive grazing, off-road vehicle use, vandalism, excessive weed growth, etc.

The materials and methods to be used in the monitoring studies must be reviewed and approved by the Service. All appropriate Federal permits must be obtained prior to initiating the field studies.

Reports. A written report, presenting and analyzing the data from the project monitoring, must be prepared by a qualified biologist in each of the years in which a monitoring survey is required. Copies of the report must be submitted by December 31 of the same year to the Service (Chief of Endangered Species, Sacramento Fish and Wildlife Office), and the Department of Fish and Game (Supervisor, Environmental Services, Department of Fish and Game, 1416 Ninth Street, Sacramento, California 95814; and Staff Zoologist, California Natural Diversity Data Base, Department of Fish and Game, 1220 S Street, Sacramento, California 95814). The report must explicitly address the status and progress of the transplanted and planted elderberry and associated native plants and trees, as well as any failings of the conservation plan and the steps taken to correct them. Any observations of beetles or fresh exit holes must be noted. Copies of original field notes, raw data, and photographs of the conservation area must be included with the report. A vicinity map of the site and maps showing where the individual adult beetles and exit holes were observed must be included. For the elderberry and associated native plants, the survival rate, condition, and size of the plants must be analyzed. Real and likely future threats must be addressed along with suggested remedies and preventative measures (e.g. limiting public access, more frequent removal of invasive non-native vegetation, etc.).

A copy of each monitoring report, along with the original field notes, photographs, correspondence, and all other pertinent material, should be deposited at the California Academy of Sciences (Librarian, California Academy of Sciences, Golden Gate Park,

San Francisco, CA 94118) by December 31 of the year that monitoring is done and the report is prepared. The Service's Sacramento Fish and Wildlife Office should be provided with a copy of the receipt from the Academy library acknowledging receipt of the material, or the library catalog number assigned to it.

Access. Biologists and law enforcement personnel from the California Department of Fish and Game and the Service must be given complete access to the project site to monitor transplanting activities. Personnel from both these agencies must be given complete access to the project and the conservation area to monitor the beetle and its habitat in perpetuity.

### **Success Criteria**

A minimum survival rate of at least 60 percent of the elderberry plants and 60 percent of the associated native plants must be maintained throughout the monitoring period. Within one year of discovery that survival has dropped below 60 percent, the applicant must replace failed plantings to bring survival above this level. The Service will make any determination as to the applicant's replacement responsibilities arising from circumstances beyond its control, such as plants damaged or killed as a result of severe flooding or vandalism.

### **Service Contact**

These guidelines were prepared by the Endangered Species Division of the Service's Sacramento Fish and Wildlife Office. If you have questions regarding these guidelines or to request a copy of the most recent guidelines, telephone (916) 414-6600, or write to:

U.S. Fish and Wildlife Service  
Ecological Services  
2800 Cottage Way, W-2605  
Sacramento, CA 95825

### **Literature Cited**

Barr, C. B. 1991. The distribution, habitat, and status of the valley elderberry longhorn beetle *Desmocerus californicus dimorphus*. U.S. Fish and Wildlife Service; Sacramento, California.

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USFWS. 1980. Listing the valley elderberry longhorn beetle as a threatened species with critical habitat. Federal Register 45:52803-52807.

USFWS. 1984. Recovery plan for the valley elderberry longhorn beetle. U.S. Fish and Wildlife Service, Endangered Species Program; Portland, Oregon.

Table 1: Minimization ratios based on location (riparian vs. non-riparian), stem diameter of affected elderberry plants at ground level, and presence or absence of exit holes.

Location	Stems (maximum diameter at ground level)	Exit Holes on Shrub Y/N (quantify) <sup>1</sup>	Elderberry Seedling Ratio <sup>2</sup>	Associated Native Plant Ratio <sup>3</sup>
non-riparian	stems $\geq 1"$ & $\leq 3"$	No:	1:1	1:1
		Yes:	2:1	2:1
non-riparian	stems $> 3"$ & $< 5"$	No:	2:1	1:1
		Yes:	4:1	2:1
non-riparian	stems $\geq 5"$	No:	3:1	1:1
		Yes:	6:1	2:1
riparian	stems $\geq 1"$ & $\leq 3"$	No:	2:1	1:1
		Yes:	4:1	2:1
riparian	stems $> 3"$ & $< 5"$	No:	3:1	1:1
		Yes:	6:1	2:1
riparian	stems $\geq 5"$	No:	4:1	1:1
		Yes:	8:1	2:1

<sup>1</sup> All stems measuring one inch or greater in diameter at ground level on a single shrub are considered occupied when exit holes are present anywhere on the shrub.

<sup>2</sup> Ratios in the Elderberry Seedling Ratio column correspond to the number of cuttings or seedlings to be planted per elderberry stem (one inch or greater in diameter at ground level) affected by a project.

<sup>3</sup> Ratios in the Associated Native Plant Ratio column correspond to the number of associated native species to be planted per elderberry (seedling or cutting) planted.



**Figure 1: Range of the Valley Elderberry Longhorn Beetle**

## **Appendix C:**

Dangermond Group: “Draft Program for Riverbend Park”





***DRAFT***  
**PROGRAM FOR RIVERBEND PARK**  
***(58-ACRE PORTION WEST OF SR 162)***

**PREPARED FOR  
FEATHER RIVER RECREATION AND PARKS DISTRICT**

**By**

**The Dangermond Group  
May 31, 2002**

## **Project Description**

Riverbend Park is located west of State Route 70, from the Feather River Bridge, south to State Route 162 (Randy Jennings Memorial Bridge), on the east bank and reach of the Feather River in Oroville, CA.

Development of the site has been limited, due to lack of water and power. The Feather River Recreation and Park District proposes to drill two water wells on the site to provide for irrigation water and to extend public water and sewer lines into the park from the foot of Montgomery Street for potable water and sanitation needs. Pacific Gas and Electric can bring electricity into the site from a line on the edge of the park site. The proposed facilities are as follows:

### **Recreation and Natural History Center (10,810 SF)**

The *Recreation and Natural History Center* will serve multiple needs of the community. It will house the headquarters of the *Feather River Recreation and Park District*, as well as the *Oroville Area Chamber of Commerce*. Common staff areas will provide greater opportunity for both agencies to work together, as they commonly do, to provide improved services to the Community. The reception area will also serve multiple functions as a visitor information desk, and reception area for visitors to the Center as well as for those conducting business with the FRRPD and the Chamber of Commerce. The Center's visibility from SR 70, in conjunction with clear directional signage, will make it easy for visitors to locate.

The Center will also provide recreational and educational services to the community, such as providing space for free and low-cost classes offered by FRRPD, such as art classes, boating safety classes, CPR, and fitness classes. It will also serve as a staging facility for community events hosted by FRRPD and the Chamber of Commerce. A multipurpose room with an audio/visual system will provide space for special events such as films, lectures, community meetings, or dances. In conjunction with the Ecology Nature Center, it will provide comprehensive recreational, historical, and ecological learning and activity services to the community.

The Center will be designed to aesthetically enhance the view of Riverbend Park from SR 70. In order to avoid the "big box" look, the architecture of the building or cluster of buildings will be "articulated" to provide visual interest. Some or all of the building(s) will be turned at an angle to SR 70 to further reduce the undesirable flat parallel wall effect. Indigenous materials, such as river rock, will be incorporated into the architecture of the building and hardscape. The building pad must be elevated above 153.5' to prevent flooding in the event of a 100 - year storm.

Trees and landscaping will screen and soften the parking lot and architecture. To reduce the experience of traffic noise, the Center will be designed so that outdoor areas do not face SR 70. The building itself will provide sound attenuation for the outdoor areas.



A monument sign and gate will mark the entrance to the park and provide an aesthetically pleasing entry that can be closed at night. A Kiosk (approx. 8' x 4') outside the gate will provide information to visitors who arrive during off-hours.

## **Proposed Interior Spaces for Recreation and Natural History Center**

### Common Staff Areas:

• Lobby / reception area / visitor information (1-2 employees)	750 SF
• Common staff kitchen / coffee / lounge	730 SF
• Staff restrooms	200 SF
• Multi-purpose / assembly lab / copy room	290 SF
• AV room	400 SF
• Conference room	<u>400 SF</u>
	2,770 SF

### Park District Headquarters

• 4 Offices:	580 SF
• Open office area for approx. 6-8 employees (cubicles):	1,040 SF
• Library / conference room	150 SF
• Storage closets	20 SF
• Hallways & circulation	<u>100 SF</u>
	Subtotal: 1,890 SF

### Chamber of Commerce Headquarters:

• 3 offices	440 SF
• Open area for 3 employees (cubicles)	390 SF
• Library / conference room	150 SF
• Storage closets	20 SF
• Hallways & circulation	<u>60 SF</u>
	Subtotal: 1,150 SF

### Public Spaces

• Multipurpose room / auditorium w/ storage room	1310 SF
• Classroom	620 SF
• Weight room and locker rooms w/ showers	900 SF
• Concessions (bike, raft, & kayak rentals, bait & tackle shop, snacks, etc.)	1,500 SF
• Public restrooms	400 SF
• Hallways and circulation	<u>270 SF</u>
	Subtotal 5,000 SF

- Shaded courtyard / outdoor display area with tables and benches (1600 SF, but not calculated as part of interior SF)

Required Parking Recreation & Natural History Center:

Office space: 5,000 sq. ft (18 employees x 1.5)	=27 spaces
Assuming 80 people in multipurpose room / auditorium	=16 space
Assuming 38 students in classroom	
(assuming 16.2 sq. ft. per student)	= 5 spaces
Balance: 3,070 SF x 1 space per 300 SF	= <u>13 spaces</u>
Subtotal Required Parking:	= 61 spaces

**Temporary Modular for Chamber of Commerce – 1,040 SF**

by D & D Homes (530) 532-3301

- 3 offices
- Small conference room
- Lobby
- 2 restrooms
- Kitchen
- Utility & closets

Required Parking (temporary) –	
1,040 SF x 1 space per 300 = 4 spaces	
or 4 employees x 1.5	= 6 spaces

**Ecology Nature Center**

The Ecology Nature Center would be located on an existing flat, elevated area, which is composed of compacted tailings, and stands at 150 foot elevation, which is one of two locations on the site which are above the 50 and 100 year flood plain. This tailings “plateau” would be re-contoured to soften its rough, unnatural looking edges, and a retention wall would be constructed on the east side. The elevated location would also provide a good observation area for park the park docent, which would improve park security.

The architectural features of the nature center would fit functionally and aesthetically into its “environmental” context and setting by utilizing indigenous or recycled materials, and environmentally sensitive design and technology.

Some ideas to promote the theme of environmental sensitivity include:

- Active and passive solar energy
- Maximized use of natural lighting
- Water conservation through native plant landscaping, efficient plumbing and irrigation, gray water systems, etc.
- Minimize views of existing development (freeway, parking areas, or other man-made improvements)
- Promotion environmental art and art in a natural setting, including visual arts, theatre, and music.

Proposed interior spaces:

• 2-3 staff offices	430 sq. ft
• 2 classrooms	1,200 sq. ft
• Exhibit area	700 sq. ft
• Storage/closet	20 sq. ft
• Staff kitchen/ coffee	100 sq. ft.
• Restroom: staff single unisex	100 sq. ft
• Public Restroom	480 sq. ft
• Library/conference	150 sq. ft
• Work /prep area	100 sq. ft
• Hallways / circulation	<u>200 sq. ft.</u>
Total	3,480 sq. ft

**Parking Requirements for Ecology Nature Center:**

Required* parking spaces for visitor's center – 3,480 x 1 space per 300 sq. ft	= 12 spaces
Plus employees parking – 1.5 spaces per employee (assume 3 employees)	= 6 spaces
Parking for picnic areas around Nature Center and Amphitheatre	<u>= 36 spaces</u>

Total Parking 54 spaces

**Outdoor Interpretation:**

Outdoor interpretive areas: 4 information kiosks, accessible walkways with interpretive signage for self-guided tours that exhibit information about riparian habitat, terrestrial wildlife, native birds and fish, native American culture and historical displays (such as a reconstruction of a native American roundhouse), a native garden for plant I.D., a “council circle, and a remote “composting toilet” to demonstrate ecological alternatives.

### **Amphitheatre: Art in the Natural Setting / Environmental Art:**

An outdoor amphitheatre is proposed which would be located approximately 300 feet north of the Ecology Nature Center. The amphitheatre would be formed out of the existing crescent-shaped arc of tailings piles to seat approximately 200 people. The amphitheatre will allow for presentations and nature lectures, “art-in nature” events, such as theatre and music, and would provide a starting point for nature walks and docent-led nature tours. The amphitheatre would have a festive sailcloth-like cover over the stage area, theatre lighting, and a sound system

### **Parking for amphitheatre:**

Requirement\*: one space for every five seats; 18 inches of bench = one seat  
200 people would require 40 parking spaces. Parking would also be provided for two or three busses.

### **Outdoor Facilities and Trails Associated with Ecology Nature Center:**

- Bike path extension - 0.5 miles
- Packed gravel hiking trails loop/ system - 1.5 miles
- Elderberry habitat - 15 acre preserve
- One double public restroom 20' x 22'
- Outdoor lighting for nighttime events - the parking lot, Ecology Nature Center, and amphitheatre.
- 12 Covered picnic sites with picnic table & small shade structure – 170 sq. ft. ea

Note: Some of the picnic areas and facilities below may get incorporated into the Nature Center

### **Boat Ramp:**

- 40 Boat spaces
- One public double restroom, 20' x 22' each

### **Non- Associated Day Use Areas:**

Assume non-associated day use area capacity = 248 people

- Two fifty-person group sites – approx. 1,500 sq. ft. each
- Five four table group sites – approx. 500 sq. ft.
- 28 family picnic sites/ with small shade structures with picnic table – approx. 170 sq. ft. each
- One public double restroom: 20' x 22' each

Parking for non-associated day use areas:

City minimum parking requirements\* - 5% of 9 acres x approximately 109 spaces/acre = 49 parking spaces

**Total Parking Spaces on 9-acre site:**

207 spaces (6 of these are temporary for modular Chamber of Commerce building)  
40 boat parking spaces

**General Grading and Drainage Concepts**

The existing site is relatively flat, with a change in elevation of only 30 feet from the lowest point to the highest point. Many of the landforms on the site consist of tailings piles, pits, and ditches that were left from previous rock quarry operations. With the exception of those which have been covered by vegetation, these landforms are unnatural looking and unattractive. Much of the grading on the site will involve re-contouring to create more natural looking landforms (see Grading and Drainage Concepts graphic.)

In order to reduce the impact of impervious surfaces, parking lots and roads should utilize a permeable surface material where ever possible (e.g. “stabilized” soil, DG, gravel, turf-block, or other material.) The conceptual graphic shows how a combination of DG, AC, and concrete could be utilized.

The surfaces of roads and parking lots should be flat, and utilize a “feathered” transition, eliminating the need for curbs and gutters that would increase impacts, such as trout entrapment. Drainage from parking lots should sheet flow into adjacent landscaped areas, to be conveyed via swales into retention basins or landscaped depressions. Swales could become a landscape feature, using natural materials such as river boulders to create “dry creek beds.”

The conceptual design was prepared haven taken into account the locations of native trees and shrubs that should be preserved. It should be possible to preserve most of the existing native trees on the site. As more detailed design and construction plans are prepared, care should be taken to preserve and protect existing oak trees, California Sycamores, and other native trees, with a trunk diameter greater than 2 ½” when measured 3 ½’ above the existing grade. Elderberries (Sambucus sp.) must also be preserved. Avoid grading or construction within 5’ of the drip line of any of the above. Prior to grading or construction, a temporary enclosure should be placed around this protection zone.

Grading, soil compaction, or the introduction of irrigation or other water into their root zones adversely affects existing native oak trees that have developed under natural conditions. Avoid

irrigating or conveying water into the drip line of any existing oak trees that meet above size criteria. (Newly planted oak trees, on the other hand, will accept even summer water.). Also, avoid changing the drainage around existing oak trees.

### **Landscaping and Revegetation Concept**

The Landscaping and Revegetation Concept graphic shows the relative size and location of areas or zones of different types of landscaping (or revegetation.) The highest intensity of use and maintenance involves the “Developed Area Landscaping” and the “Day Use Area Landscaping”, which will consist of turf, native trees, and drought tolerant hydrozones planted with native plants and cultivars of native plants. These two areas require the installation of permanent irrigation systems, and involve the highest maintenance inputs and standards. The next level of relative intensity is a combination day use area that consists of turf areas interspersed with large masses of native trees and shrubs. These large revegetation zones will ultimately reduce the maintenance and water requirements of the park. It is estimated that these areas will require frequent weeding and supplemental irrigation for approximately 3 years, after which the required inputs will be less.

The “Naturalized Zones” range from extensively vegetated to sparsely vegetated. The locations and relative areas of new vegetation, mostly in the form of “New Tree Masses”, are shown on the graphic.

The following is a rough estimate of the relative areas for the two main categories:

- Area to be fully developed and landscaped, requiring permanent irrigation – approximately 26 acres.
- Area to be revegetated with native trees and shrubs, requiring temporary supplemental irrigation – approximately 20 acres.
- Area that has existing vegetation to remain native – approximately 12 acres

## **Suggested Native Plant Pallet**

### **Grasses, Sedges & Rushes**

#### **Bank (Sedges, Rushes, Some Grasses)**

*Carex barrae*, Santa Barbara Sedge –Perennial clumping sedge growing 10-40' tall

*Carex Praegracilis*, Field Sedge - Perennial clumping sedge

*Eleocharis macrostachya* – Creeping Spike Rush – Perennial Sedge growing singly or in clumps with creeping rhizomes and round stems growing 1-3 feet.

*Juncus effusus*, *Bog Rush* - Common Rush – Stiff erect perennial with round, bright green stems growing 1.5 – 4 ft. tall in tufts.

*Juncus xiphioides*, Iris-leaved Rush, Flat-Bladed Rush – Stems are flat and grow 1-2' tall

*Typha latifolia*, Common Cattail – Erect, stout perennial with long, flat, light green leaves.

#### **Low-Flow Channel – Moisture tolerant grasses**

*Agrostis exarata*, Spike Bentgrass - Kopta Slough, Yolo Count. Bunchgrass with fine, blue green leaves and large, dense seed heads 8-100 cm (3-40 in) tall. Found in sunny and shaded disturbed, moist areas, open woodland and coniferous forest from 0-2000m (6500 ft). Cool season perennial that is tolerant to flooding and fire. Use for wet meadow and stream edge restoration and landscaping

*Hordium brachyantherum ssp californicum*, California Meadow Barley – Bunchgrass that forms sod-like colonies when established. Grows to 90 cm tall, prefers heavy wet soils and is commonly found with sedge species. Cool season perennial. Tolerant to flood, fire, mowing, and moderate drought. Use for wetland and wet meadow erosion control.

*Deschampsia cespitosa*, California Hairgrass, Tufted Hairgrass – Warm season clumping grass, to 10' tall with summer flowers to 2'. Tolerates part shade and heavy clay soils. Good in waterside plantings and meadows.

*Muhlenbergia rigins*, Deer Grass – Warm season perennial grass forming dense clumps from the base. Spikelike flower stalks 2-3 feet tall. Striking fountain form.

*Deschampsia elongata* - Slender Hairgrass - Ecotype(s): Cosumnes Preserve, Sacramento County. Fine-leaf bunchgrass, bright green color with soft seed heads. Grows 10-70cm (4-28 in) tall. Found in sun to partial shade in wet sites, meadows, lakeshores and shaded slopes, 100-3100m (330-10,160 ft). Cool season annual that is tolerant to flooding. Use for wetland edges and riparian restoration and landscaping.

**Flood Plain / High-Flow Channel (moisture tolerant perennial grasses, plants with low stature)**

*Festuca rubra*, Red Fescue – Cool season perennial growing 8-10 inches tall and spreads by rhizomes. Has a fine texture and reddish color at the base of the leaves. California native, found in many plant communities, 0-8500 ft. elevation, occurring under moist conditions.

*Elymus trachycaulus trachycaulus majus*, Slender Wheatgrass –  
Ecotype(s): Willow Slough, Yolo Co. Tall, upright and sturdy bunchgrass. Grows to 30-150cm (12-59 in). Resembles *E. glaucus* but has larger seed heads and requires more water. Found in the full sun to partial shade, in wetland and associated areas of the Sacramento Valley. Cool season, short-lived perennial. Tolerant of moderately alkali soils, short duration flooding, high mowing, drought and fire. Use for grassland and wetland restoration.

*Leymus triticoides*, Creeping Wild Rye or Beardless Wild Rye  
Ecotype(s): Rio cultivar (NRCS release), Kings Co., Yolo Bypass, Yolo Co. Rhizomatous species that remains green into the summer, 45-130 cm (18-51 in) tall. Few ecotypes produce viable seed. Yolo is the most northern ecotype to produce seed. Found in full sun to partial shade in heavy soils in riparian areas and bottomlands throughout CA from the coast to 2300m (7550 ft). Cool season perennial, which is tolerant to flooding, some mowing, some fire and saline soil. This species is an excellent bank stabilizer and weed suppressor. Use for erosion control, wetland restoration, especially for waterfowl habitat. Per phone conversation with John Anderson, native grassland restoration specialist, this is the best choice for a sod-type native grass in areas that are subject to flooding. It will form a dense matt. It will tolerate traffic. Don't mow it much in the winter while it's growing, mow or burn in summer.

*Elymus glaucus*, Blue Wild Rye  
Ecotype(s): Anderson (north of Winters), Yolo Co., Bodega Bay, Marin Co., Cosumnes River Preserve, Sacramento Co., Lake Almanor, Plumas Co., Yolo Bypass, Yolo Co., Dye Creek, Tehama Co. Large, wide-leaf bunchgrass, usually tall: 60-140 cm (24-55 in), Seed heads are long and narrow. Grows in a wide variety of sites and weather conditions. Prefers full sun or partial shade, and is found in rich soils of flood plains and riparian areas. Also common in oak woodlands, Ranges from the coast to 2500m (8200 ft). Cool season perennial that is tolerant to mowing, fire, drought, short duration flooding. Use for grassland and habitat restoration.



*Festuca Californica*, California Fescue – Cool season bunchgrass with blue-green blades to 2 ft. and flower stalks to 5 ft. high, creating fountain-like clumps. Drought tolerant for sun or shade. California native which usually occurs under dry conditions. Usually found in non wetlands, but occasionally found in wetlands. Perennial. Plant communities: Mixed Evergreen Forest, Douglas-Fir Forest, Yellow Pine Forest, Chaparral, from 0-6000 ft. elevation.

*Poa secunda secunda*, Pine Blue Grass, One Sided Blue Grass

Ecotype(s): Fisk Creek, Yolo Co., Vina Plains, Tehama Co.

Small, fine-leaved bunchgrass with slender seed stalks, 15 – 100 cm (6 – 39 in) tall. Stems occasionally turn red or purple. Found in many habitats: dry soils of ridge tops, rocky or sandy slopes, oak woodlands, chaparral, vernal pools. Ranges from 0-3800 m (12,470 ft). Full sun to partial shade. Cool season perennial that tolerates most soils, moderate flooding, mowing, drought and fire. Excellent early colonizer on disturbed or burned sites due to shallow roots. Use for grassland restoration, road cuts, and landscaping.

*Nassella pulchra*, Purple Needlegrass

Ecotype(s): Cosumnes River Preserve, Sacramento Co., Fisk Creek, Yolo Co., Inks Creek, Tehama Co., Jepson Prairie, Solano Co., Llano Seco Ranch, Glenn Co., Quail Ridge, Napa Co., Stone Ranch, Yolo Co

Largest of the native needlegrasses and is the California State grass. Long-lived, deep rooted, fine-leaved bunchgrass with purplish seed heads, 30-100cm (12-40 in) tall. Stays green longer than most CA grasses, especially with some summer water. Prefers well-drained sites although it may be found in flood zones from the coast to 1300 m. Cool season perennial. Tolerant to serpentine soils, fire, drought, mowing and moderate flooding. Like *N. lepida* and *N. cernua*, it is excellent for use in restoration because it is tough. Use for grassland restoration, roadsides, native lawns and landscaping.

### **Grasses for Above the Flood Plain**

*Elymus multisetus*, Squirrel Tail

Ecotype(s): Tehama County

Coarse-leaf bunchgrass, 10-65 cm tall (4-26 in). Seed heads resemble a bottle brush when ripe. Found on dry, sandy or gravelly hillsides in full sun, 600-4200m (1970-13,780 ft). Cool season perennial. Tolerant to drought, fire, alkaline and saline soil. Use for grassland and habitat restoration.

*Melica californica*, California Melic or Oniongrass

Ecotype(s): Inks Creek, Tehama Co., Fisk Creek, Yolo Co., Ring Mountain, Marin Co. and Winters, Yolo County

Lush, soft-leaved grass that forms sod-like bunches with shiny seed heads, 50-130 cm (20-51 in) tall. Prefers very well drained sites and is commonly found in full sun to partial shade in oak

woodland and chaparral, range from 0 – 4000 feet. Cool season perennial that is tolerant to mowing, fire, freezing winter temperatures and drought. Use for landscaping, grassland restoration: many bird species eat the seeds; readily colonizes disturbed sites such as road cuts

*Aristida ternipes* var. *hamulosa*, Three – awn

Warm season clumping grass to 10 inches tall with airy but compact inflorescence and three-part awn. This striking grass is very drought-tolerant. California native that typically occurs under dry conditions in slope habitats ranging from 328 to 4429 ft. Plant communities include Coastal Sage Scrub and Valley Grassland.

### **Flood Tolerant California Native Trees and Shrubs:**

*Acer negundo*, Boxelder – Deciduous Tree, 40-60 ft. high, native to moist stream banks and valleys below 6000'. Found statewide in many plant communities. Very flood tolerant, notable fall color.

*Acer macrophyllum* – Bigleaf maple – Deciduous riparian shade tree growing 30-90 feet high. This coastal and inland native is found in moist streambanks and canyons below 5000'. Notable fall color.

*Alnus rhombifolia*, White alder – Fast growing deciduous riparian tree growing 30-90 feet high. Found statewide along stream banks below 5000'. Very flood tolerant

*Fraxinus latifolia*, Oregon Ash – Deciduous riparian tree reaching 50-80 feet high. Grows along streams or in valleys from sea level to 5500' elevation. Found in the northern Coast Ranges and west side base of the northern Sierra Nevada. Very flood tolerant, notable fall color.

*Plantanus racemosa*, California Sycamore – Fast growing deciduous tree reaching 50-100 ft. high. Tolerant of heat, wind, and moist soils. Flood tolerant.

*Populus fremontii*, Fremont Cottonwood – Fast growing deciduous riparian trees reaching 40-60 ft. high. Found below 4000' in foothills or open plains. Does fine with little water and very flood tolerant.

*Populus trichocarpa*, Black Cottonwood –

*Quercus lobata*, Valley Oak- Large inland deciduous tree from 60-80 ft high and wide. Found statewide in woodland and grassland communities below 2000' elevation. Very flood tolerant

*Quercus wislizenii*, Interior Live Oak – Inland evergreen tree from 30-70 ft. high, forming a broad rounded crown. Found in valleys and slopes below 5000' elevation, mostly in Foothill Woodlands and lower Sierra Nevada and inner Coast Ranges. Flood tolerant.

*Salix gooddingii*, Goodding's Willow – Deciduous riparian tree from 20 – 30 feet high, found statewide in many locations below 2000' elevation. Very flood tolerant

*Salix laevigata*, Red Willow – Large deciduous riparian tree 20-40 ft. high, found along streambanks below 5000' elevation statewide. Very flood tolerant

*Salix lasiandra*, Yellow Willow, Western Black Willow – Deciduous riparian tree growing 20-30 ft. high, found statewide below 8000' elevation. Very flood tolerant

*Umbellularia californica*, California Bay – Aromatic evergreen tree or large shrub slowly growing 30-60 ft. high in woodland or forest plant communities below 5000' elevation.

### **Flood Tolerant Shrubs**

*Cephalanthus occidentalis*, Buttonwillow – Very flood tolerant, good fall color.

*Salix lasiolepis*, Arroyo Willow – Deciduous shrub or small tree, 3-25' high, found typically in moist or wet sites along mountain stream, but also occupies coarse dry slopes. Found ranging from 4000' - 10,000' elevation. Flood tolerant.

*Rosa Californica*, California Wild Rose – Riparian and woodland shrub to 6 ft. high, found statewide along stream banks and moins plande from sea level to 4000' elevation. Tolerates sun or shade and is hardy to 15 degrees Fahrenheit. Very flood tolerant.

### **Flood Tolerant Vines**

*Rubus ursinus*, California Blackberry - Deciduous, riparian mounding vine or shrub to 20 ft. long, found statewide in moist valley and foothill places or along streams. Very flood tolerant

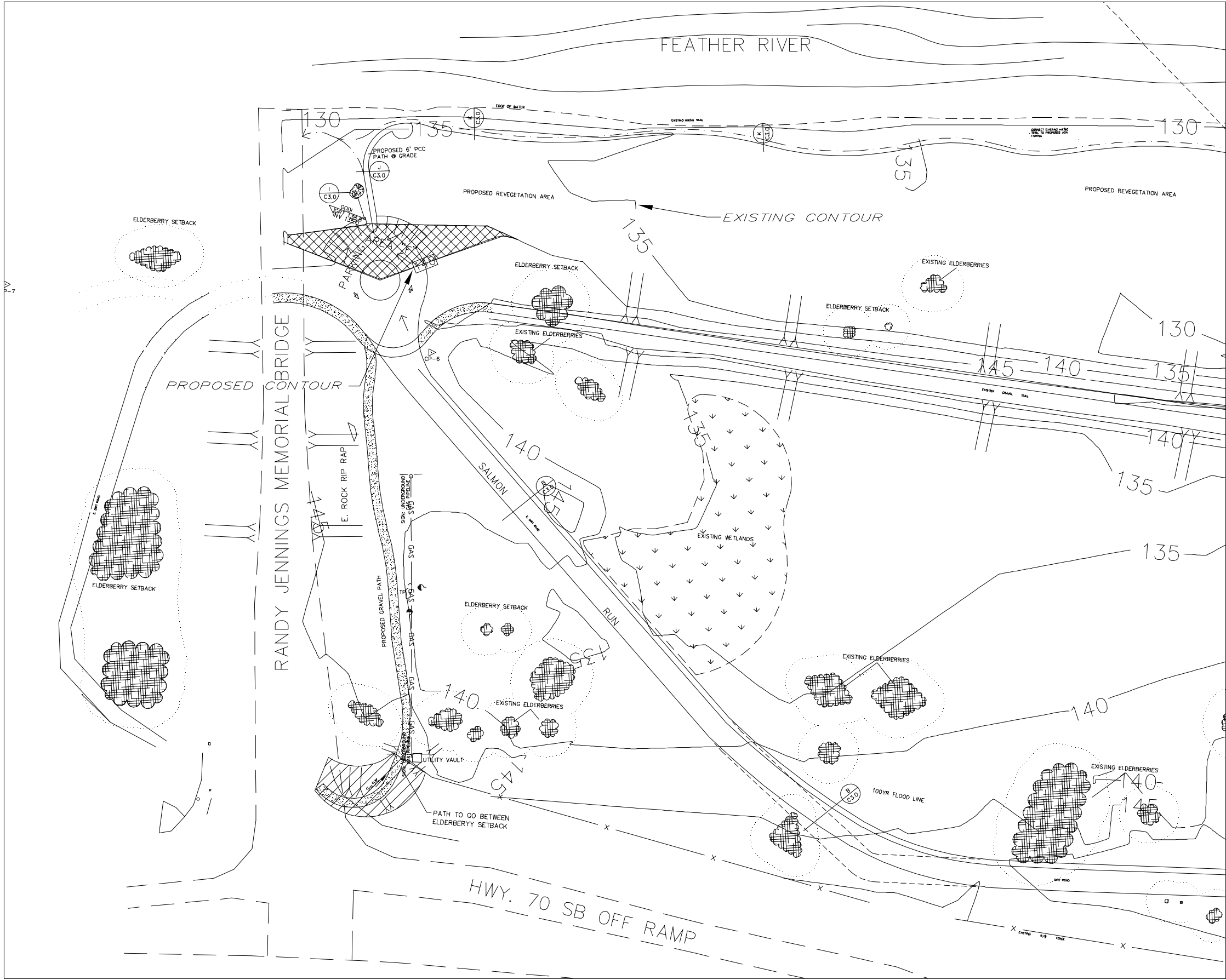
*Vitis Californica*, California Wild Grape – Woody deciduous vine with sprawling, climbing growth habit. Grows in central and northern state along streams and canyons in Coast Ranges, Central Valley, and foothills of Sierra Nevada below 4000' elevation.

## **Appendix D:**

Engineering Specifications:

Grading and Drainage Concepts  
&  
Utility Infrastructure  
&  
Project Features





SITE GRADING ESTIMATIONS	QUANTITY
ROADWAY EXCAVATION (CUT)	5,000 CY
SITE CUT AND TREE EXCAVATION MATERIAL	5,200 CY
STRUCTURAL EMBANKMENT FILL	34,000 CY
SITE IMPORT FILL AND TREE PITS	48,500 CY
TOTAL FILL	72,300 CY

LEGEND

FILL AREA

CUT AREA

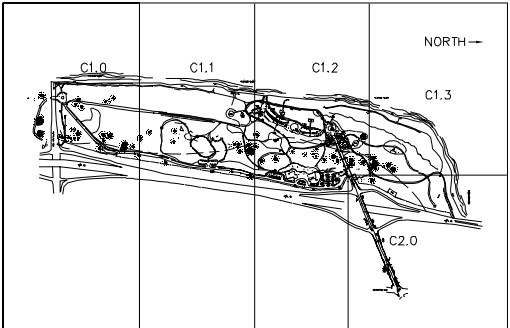
EXISTING GROUND CONTOUR

PROPOSED FINISHED CONTOUR

ELDER BERRY BUSHES

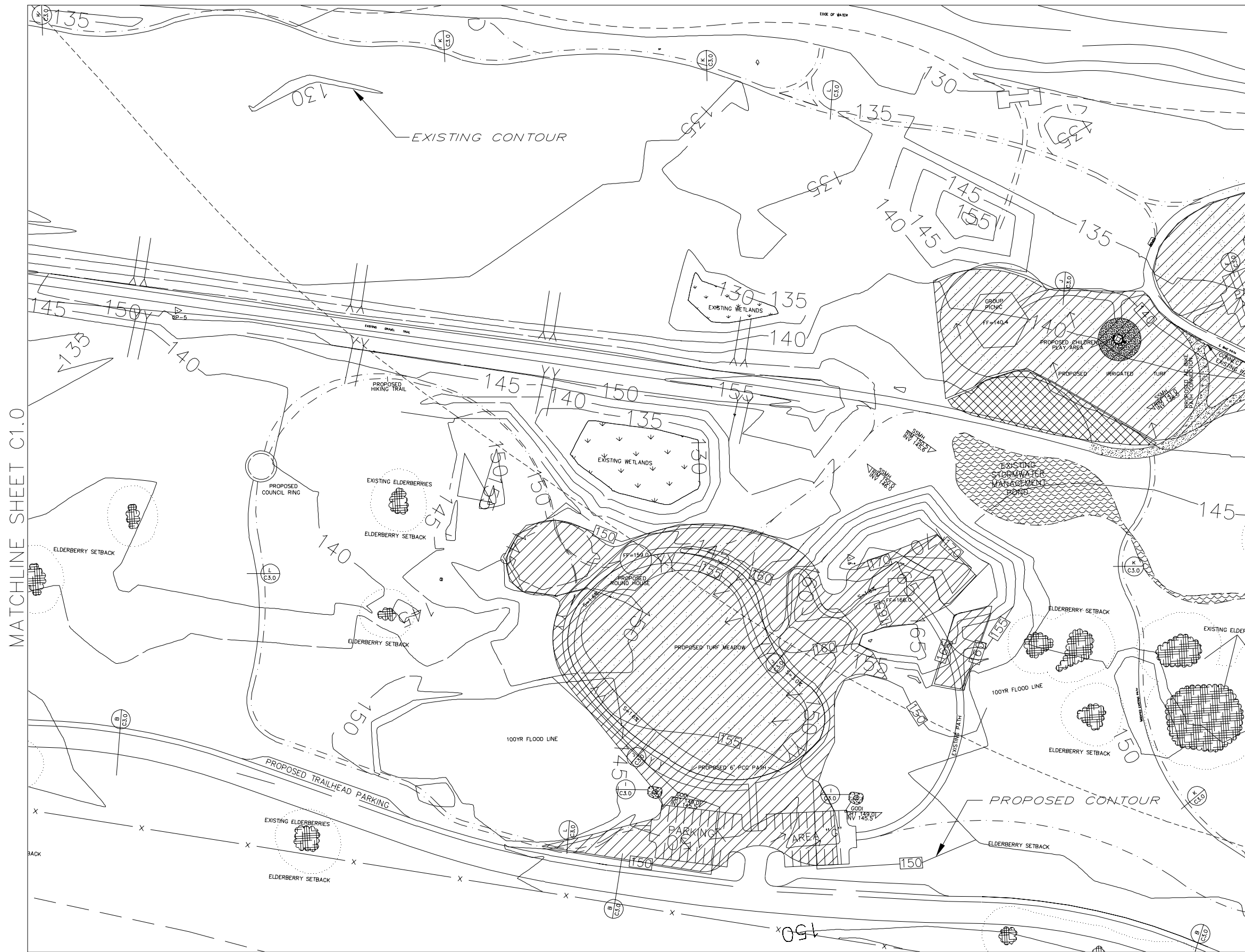


SCALE: 1"=50'  
5' CONTOURS



SHEET INDEX

Riverbend Park  
Grading and Drainage Concepts  
EDAW  
Figure 3-5a



SITE GRADING ESTIMATIONS	QUANTITY
ROADWAY EXCAVATION (CUT)	5,000 CY
SITE CUT AND TREE EXCAVATION MATERIAL	5,200 CY
STRUCTURAL EMBANKMENT FILL	34,000 CY
SITE IMPORT FILL AND TREE PITS	48,500 CY
TOTAL FILL	72,300 CY

LEGEND

FILL AREA

CUT AREA

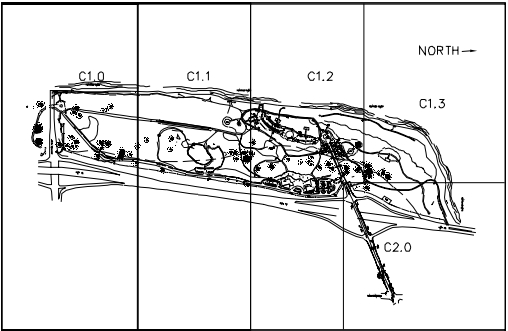
EXISTING GROUND CONTOUR

PROPOSED FINISHED CONTOUR

ELDER BERRY BUSHES



SCALE: 1"=50'  
5' CONTOURS



SHEET INDEX

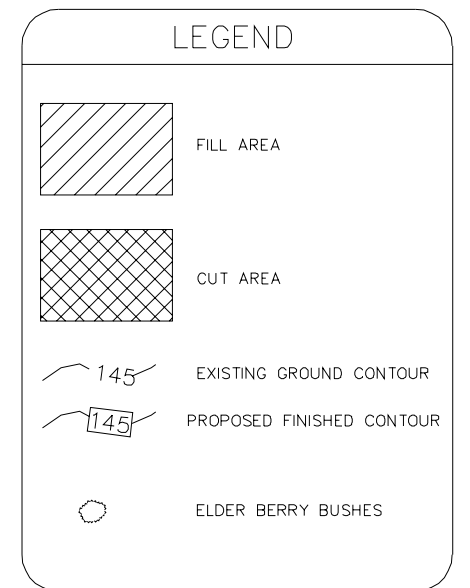
Riverbend Park  
Grading and Drainage Concepts  
EDAW  
Figure 3-5b



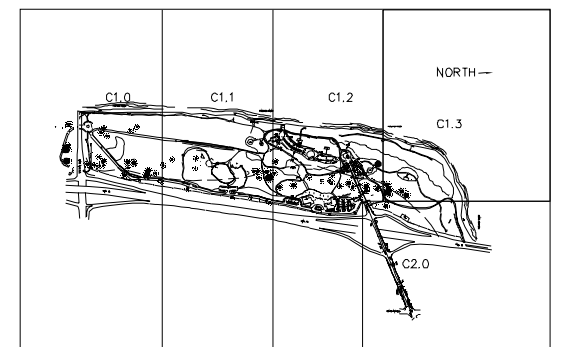




SITE GRADING ESTIMATIONS	QUANTITY
ROADWAY EXCAVATION (CUT)	5,000 CY
SITE CUT AND TREE EXCAVATION MATERIAL	5,200 CY
STRUCTURAL EMBANKMENT FILL	34,000 CY
SITE IMPORT FILL AND TREE PITS	48,500 CY
TOTAL FILL	72,300 CY



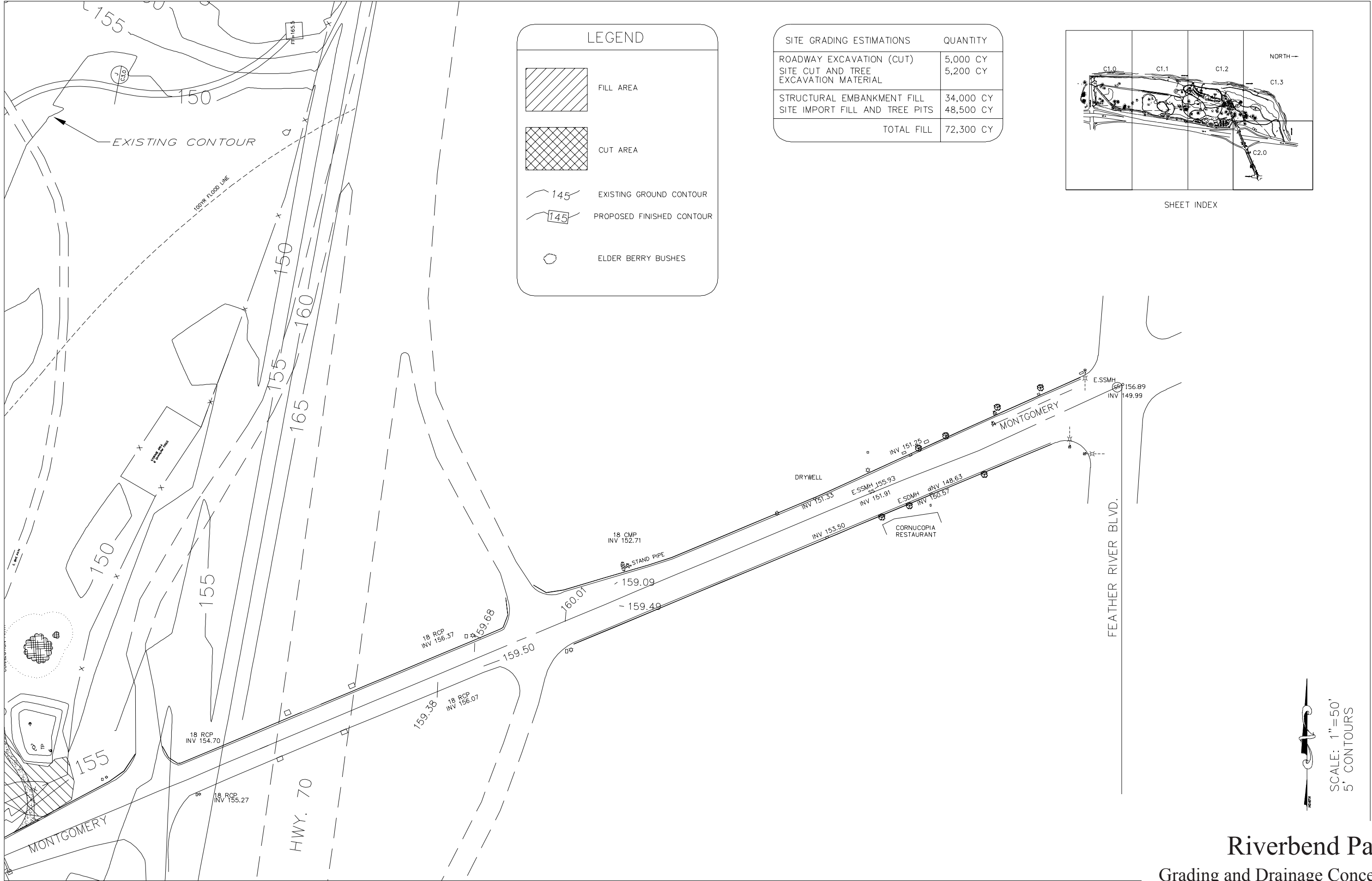
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5' CONTOURS



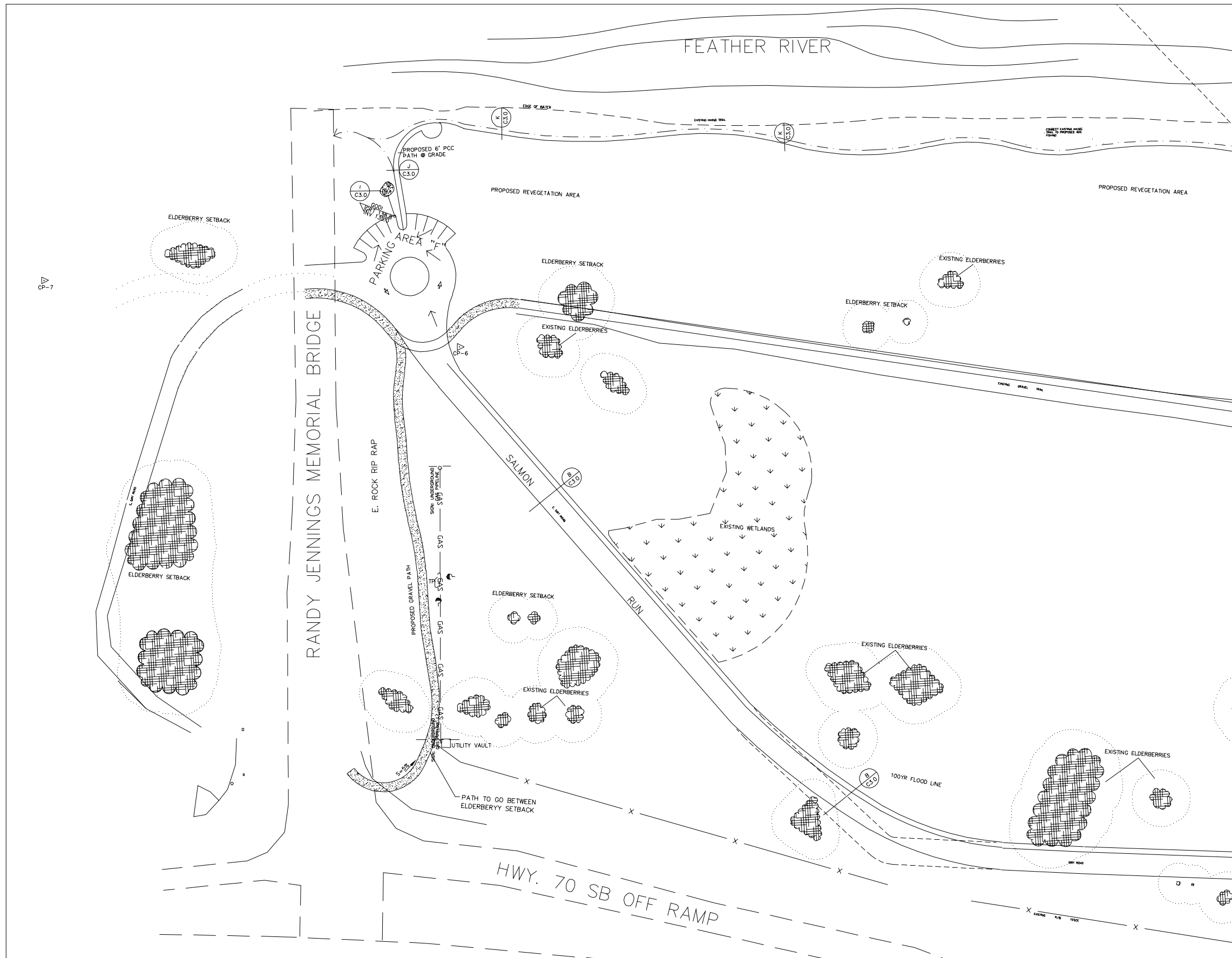
SHEET INDEX

**Riverbend Park**  
Grading and Drainage Concepts  
EDAW **Figure 3-5d**

MATCHLINE SHEET C1.2 & 1.3

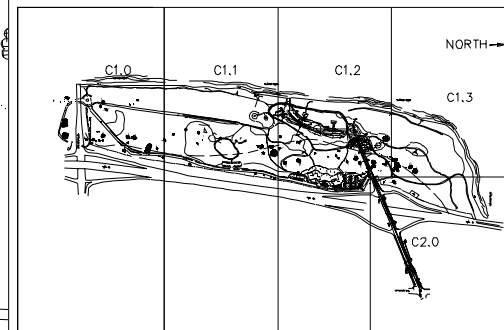


Riverbend Park  
Grading and Drainage Concepts  
EDAW  
Figure 3-5e



MATCHLINE SHEET C1.1

LEGEND	
TP	TELEPHONE POLE
LP	LIGHT POST
CMP	CORRUGATED METAL PIPE
	GUY WIRE
	UTILITY POLE
	DENSE FOLIAGE
	SIGN POST
	EXISTING GROUND CONTOUR
	PROPOSED FINISHED CONTOUR
	CONTROL POINT
	ELDER BERRY BUSHES
	SANITARY SEWER MANHOLE
	PROPOSED FORCE MAIN
	PROPOSED SEWER
	PROPOSED WATER
	PROPOSED GAS
	PROPOSED STORM DRAIN
	TRAFFIC DIRECTION ARROW
	EXISTING SEWER
	EXISTING WATER
	WASTEWATER PUMP STATION
	PROPOSED FIRE HYDRANT



SHEET INDEX



SCALE: 1"=50'  
5' CONTOURS

## Riverbend Park

### Utility Infrastructure

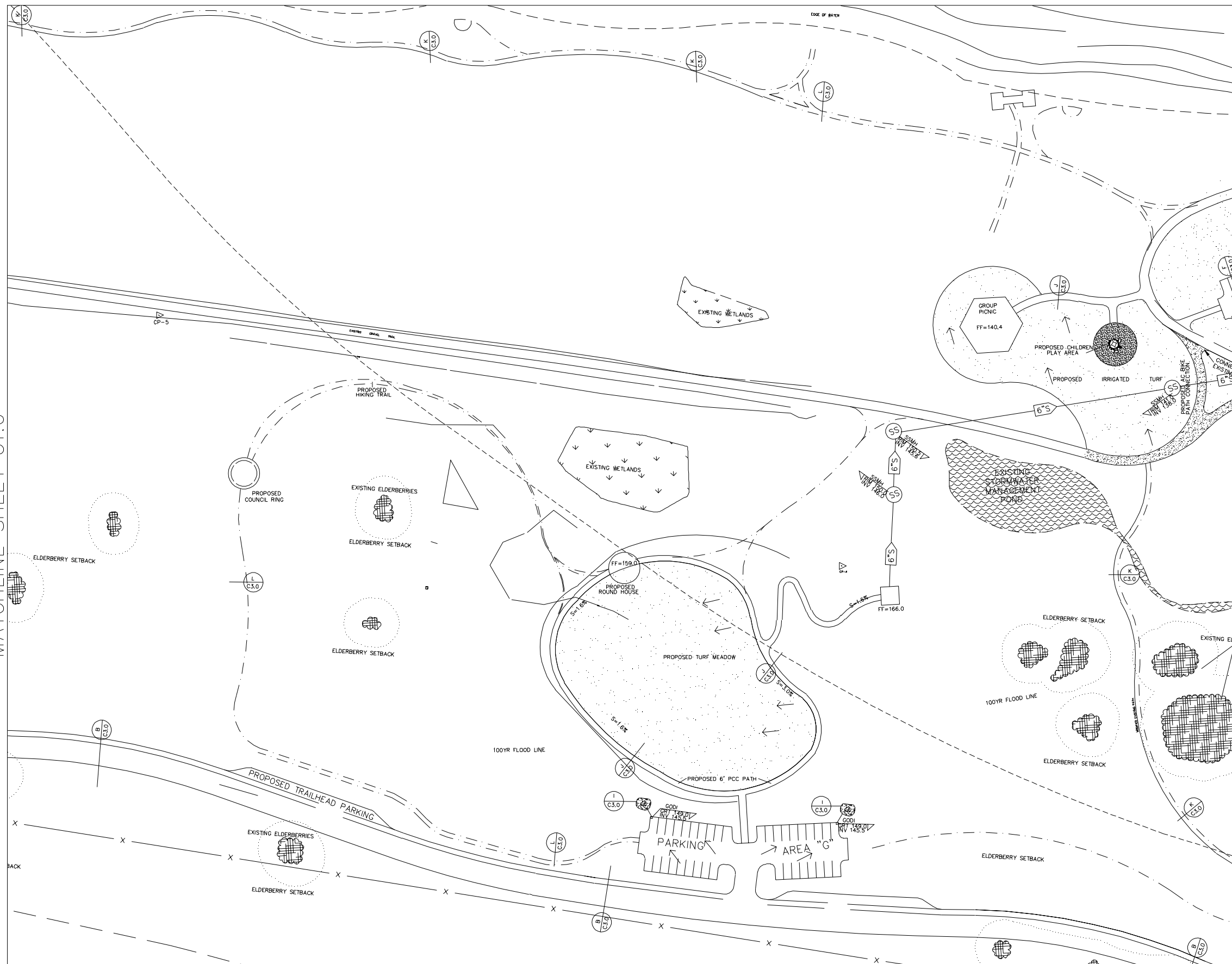
EDAW

Figure 4.3-1a



MATCHLINE SHEET C1.0

MATCHLINE SHEET C1.2

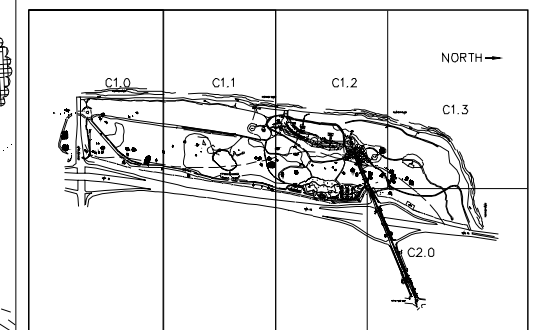


## LEGEND

TP	TELEPHONE POLE
LP	LIGHT POST
CMP	CORRUGATED METAL PIPE
—	GUY WIRE
—	UTILITY POLE
—	DENSE FOLIAGE
—	SIGN POST
—	EXISTING GROUND CONTOUR
—	PROPOSED FINISHED CONTOUR
—	CONTROL POINT
—	ELDER BERRY BUSHES
—	SANITARY SEWER MANHOLE
—	PROPOSED FORCE MAIN
—	PROPOSED SEWER
—	PROPOSED WATER
—	PROPOSED GAS
—	PROPOSED STORM DRAIN
—	TRAFFIC DIRECTION ARROW
—	EXISTING SEWER
—	EXISTING WATER
—	WASTEWATER PUMP STATION
—	PROPOSED FIRE HYDRANT



SCALE: 1"=50'  
5' CONTOURS



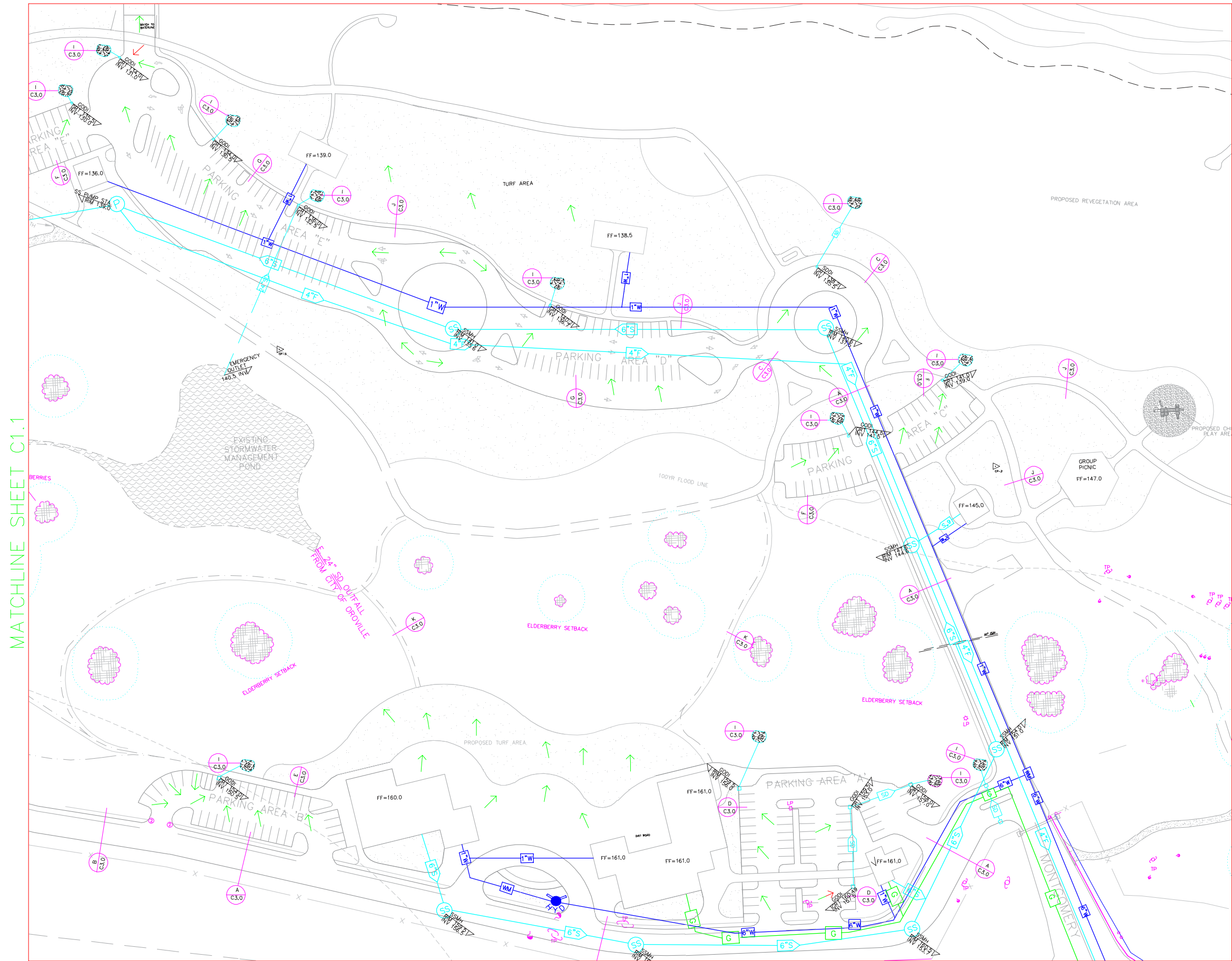
SHEET INDEX

## Riverbend Park

### Utility Infrastructure



Figure 4.3-1b



MATCHLINE SHEET C1.1

MATCHLINE SHEET C1.3 & C2.0

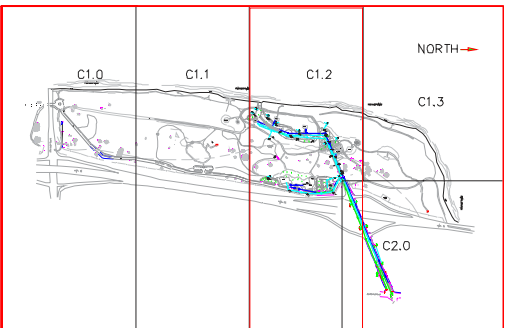
# LEGEND

- TP TELEPHONE POLE
- LP LIGHT POST
- CMP CORRUGATED METAL PIPE
- GUY WIRE
- UTILITY POLE
- DENSE FOLIAGE
- SIGN POST
- EXISTING GROUND CONTOUR
- PROPOSED FINISHED CONTOUR
- CONTROL POINT
- ELDER BERRY BUSHES
- SANITARY SEWER MANHOLE
- PROPOSED FORCE MAIN
- PROPOSED SEWER
- PROPOSED WATER
- PROPOSED GAS
- PROPOSED STORM DRAIN
- TRAFFIC DIRECTION ARROW
- EXISTING SEWER
- EXISTING WATER
- WASTEWATER PUMP STATION
- PROPOSED FIRE HYDRANT

SHEET INDEX



SCALE: 1"=50'  
5' CONTOURS

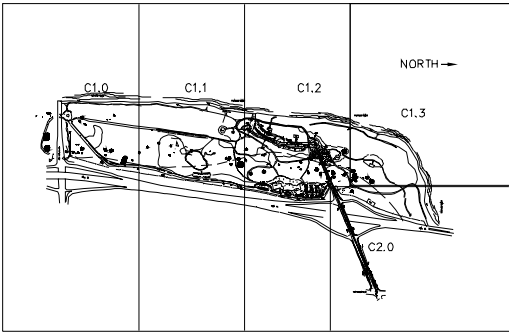


## Riverbend Park Utility Infrastructure



LEGEND	
TP	TELEPHONE POLE
LP	LIGHT POST
CMP	CORRUGATED METAL PIPE
	GUY WIRE
	UTILITY POLE
	DENSE FOLIAGE
	SIGN POST
	EXISTING GROUND CONTOUR
	PROPOSED FINISHED CONTOUR
	CONTROL POINT
	ELDER BERRY BUSHES
	SANITARY SEWER MANHOLE
	PROPOSED FORCE MAIN
	PROPOSED SEWER
	PROPOSED WATER
	PROPOSED GAS
	PROPOSED STORM DRAIN
	TRAFFIC DIRECTION ARROW
	EXISTING SEWER
	EXISTING WATER
	WASTEWATER PUMP STATION
	PROPOSED FIRE HYDRANT

SCALE: 1"=50'  
5' CONTOURS

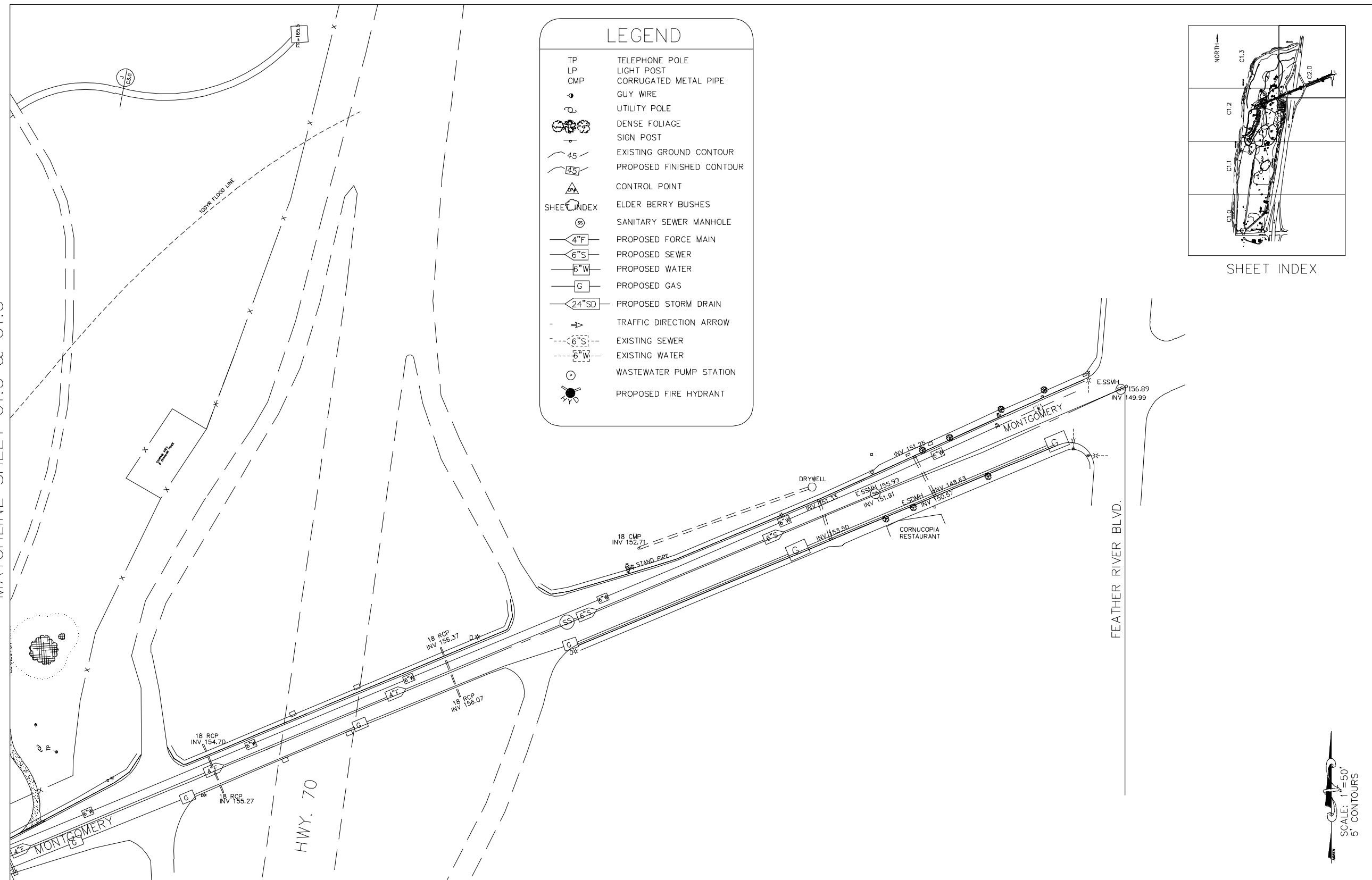


SHEET INDEX

# Riverbend Park Utility Infrastructure

Source: BBA Engineering 2003

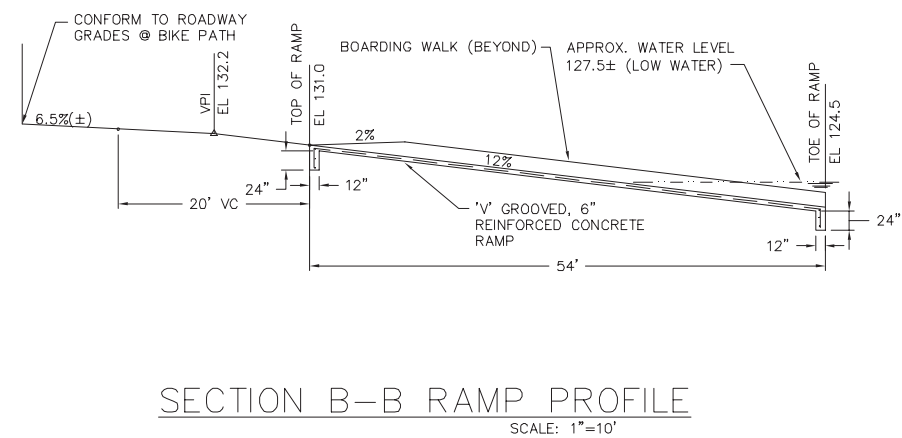
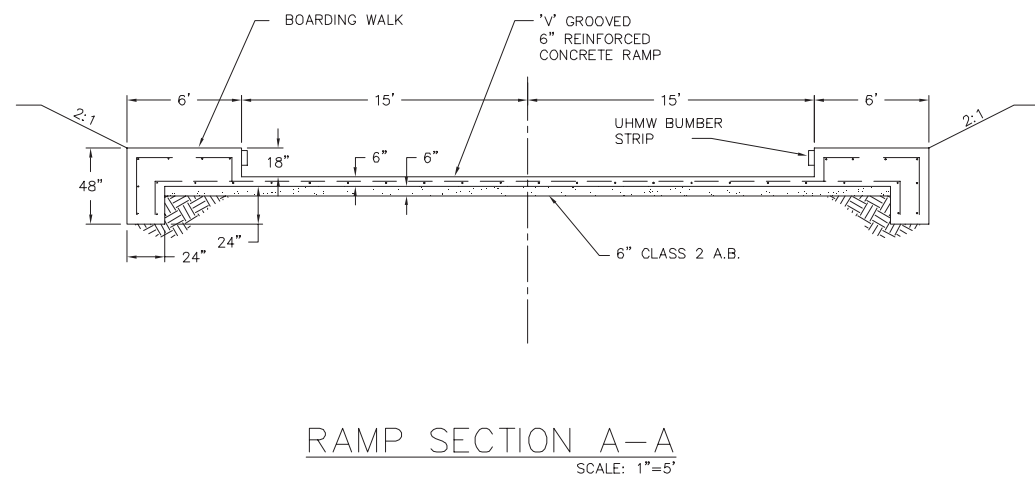
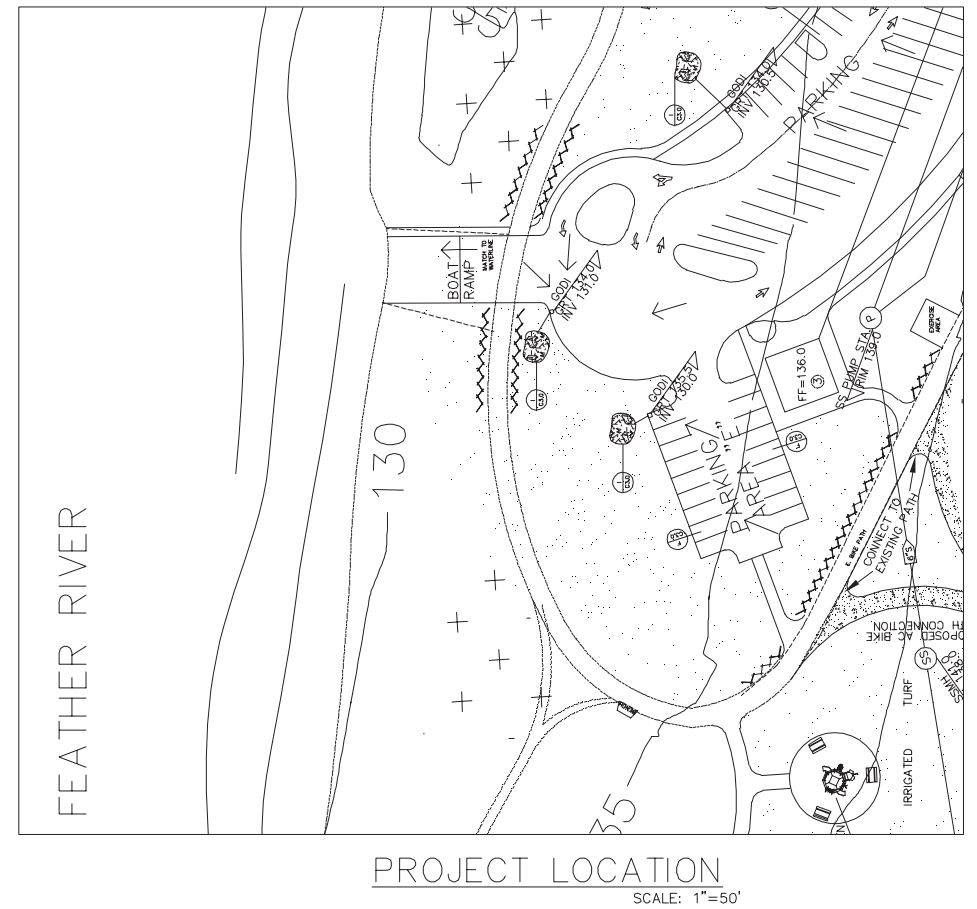
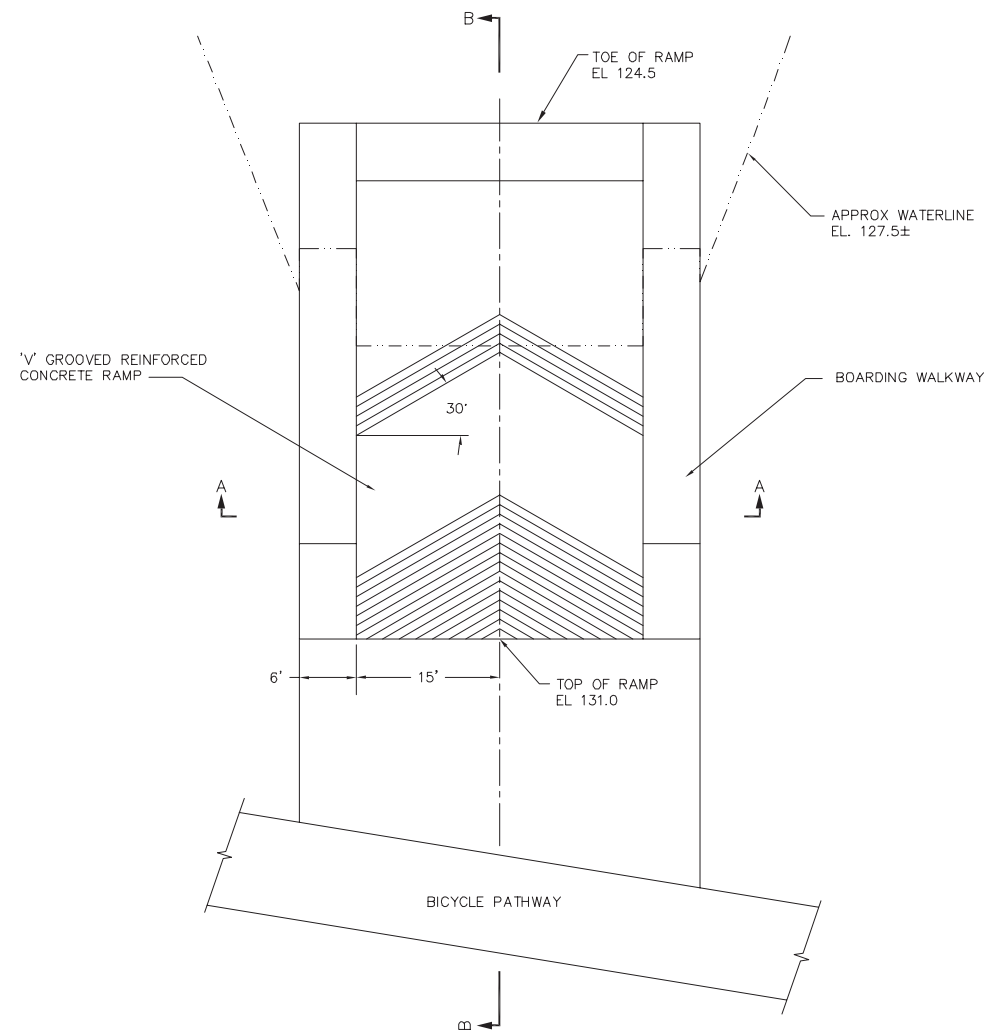
MATCHLINE SHEET C1.3 & C1.3



# Riverbend Park

## Utility Infrastructure





## Riverbend Park Engineering Details

# FEATHER RIVER

## SURVEY CONTROL POINTS

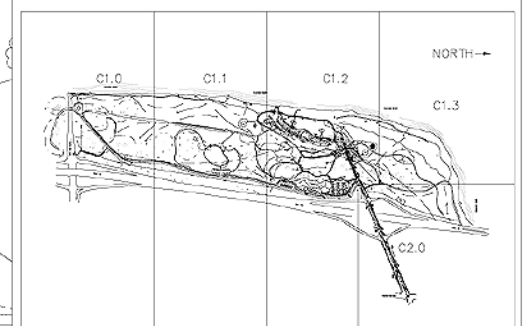
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CP-2	N-670752.9940 E-2119925.3160 ELEV-146.92	CP-6	N-667441.5220 E-2119476.1070 ELEV-144.05
CP-3	N-671744.3410 E-2120314.4650 ELEV-152.26	CP-7	N-666981.1680 E-2119404.5340 ELEV-132.34
CP-4	N-589218.2430 E-2119855.3610 ELEV-171.52		

## LEGEND

TP	TELEPHONE POLE
LP	LIGHT POST
CMP	CORRUGATED METAL PIPE
	GUY WIRE
	UTILITY POLE
	DENSE FOLIAGE
	SIGN POST
	EXISTING GROUND CONTOUR
	PROPOSED FINISHED CONTOUR
	CONTROL POINT
	ELDER BERRY BUSHES
	SANITARY SEWER MANHOLE
	PROPOSED FORCE MAIN
	PROPOSED SEWER
	PROPOSED WATER
	PROPOSED GAS
	PROPOSED STORM DRAIN
	PROPOSED DISC GOLF TEE @ GRADE
	PROPOSED DISC GOLF BASKET
	TRAFFIC DIRECTION ARROW
	EXISTING SEWER
	EXISTING WATER
	WASTEWATER PUMP STATION
	PROPOSED FIRE HYDRANT

SCALE: 1"=50'  
5' CONTOURS

DECEMBER 2002



SHEET INDEX

2ND DRAFT

Approved By: _____	Date: _____	FIELD BOOK ELEVATION DATUM STATE OF CALIFORNIA DEPT. OF TRANSPORTATION (CAL TRANS) MONUMENT CM 15.52 ELEV. = 153.108	DRAWN BY: GREG COYNER DESIGNED: GREG COYNER CHECKED BY: A.G.B. SCALE: AS NOTED	APPROVED BY: _____ ALAN GEORGE BROWN RCE 24575	DATE: _____	 <b>BBA ENGINEERING</b> CIVIL ENGINEERS • LAND SURVEYORS 2060 Park Ave. Oroville, CA 95966 (530) 534-1011 FAX (530) 534-0908	<b>PROPOSED ON-SITE IMPROVEMENTS RIVERBEND PARK</b> FEATHER RIVER RECREATION & PARK DISTRICT OROVILLE, CALIFORNIA	SHEET <b>C1.0</b> JOB NO. 01-083
DATE	NO	REVISION	BY	APP'D				

MATCHLINE SHEET C1.0



SURVEY CONTROL POINTS

CP-1	N-669943.8590 E-2119794.1270 ELEV-145.33	CP-5	N-668467.1370 E-2119580.5690 ELEV-150.88
CP-2	N-670752.9940 E-2119926.3160 ELEV-146.92	CP-6	N-667441.5220 E-2119478.1070 ELEV-144.05
CP-3	N-671744.3410 E-2120314.4650 ELEV-152.26	CP-7	N-666981.1680 E-2119404.5340 ELEV-132.34
CP-4	N-669218.2420 E-2119856.3610 ELEV-171.52		

LEGEND

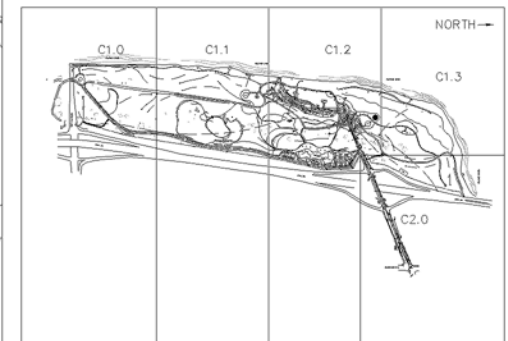
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LP	LIGHT POST
CMP	CORRUGATED METAL PIPE
+	GUY WIRE
U	UTILITY POLE
+	DENSE FOLIAGE
+	SIGN POST
45	EXISTING GROUND CONTOUR
55	PROPOSED FINISHED CONTOUR
+	CONTROL POINT
+	ELDER BERRY BUSHES
+	SANITARY SEWER MANHOLE
4" F	PROPOSED FORCE MAIN
6" S	PROPOSED SEWER
6" W	PROPOSED WATER
G	PROPOSED GAS
24" SD	PROPOSED STORM DRAIN
+	PROPOSED DISC GOLF TEE @ GRADE
+	PROPOSED DISC GOLF BASKET
+	TRAFFIC DIRECTION ARROW
6" S	EXISTING SEWER
6" W	EXISTING WATER
+	WASTEWATER PUMP STATION
+	PROPOSED FIRE HYDRANT



SCALE: 1"=50'

5' CONTOURS

DECEMBER 2002



SHEET INDEX

2ND DRAFT

Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

DATE	NO	REVISION	BY	APP'D

FIELD BOOK  
ELEVATION DATUM  
STATE OF CALIFORNIA  
DEPT. OF TRANSPORTATION  
(CAL TRANS) MONUMENT  
CM 15.52  
ELEV. = 153.109

DRAWN BY: GREG COYNER  
DESIGNED GREG COYNER  
CHECKED BY: A.G.B.  
SCALE AS NOTED

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
ALAN GEORGE BROWN RCE 24578



**PROPOSED ON-SITE IMPROVEMENTS**  
**RIVERBEND PARK**  
FEATHER RIVER RECREATION & PARK DISTRICT  
OROVILLE, CALIFORNIA

SHEET  
C1.1

JOB NO.  
01-083



# SURVEY CONTROL POINTS

CP-1	N-659943.8590 E-2119794.1270 ELEV-145.33	CP-5	N-658457.1370 E-2119560.5690 ELEV-150.88
CP-2	N-670752.9940 E-2119926.3180 ELEV-145.92	CP-6	N-667441.5220 E-2119478.1070 ELEV-144.05
CP-3	N-671744.3410 E-2120314.4550 ELEV-152.28	CP-7	N-666981.1680 E-2119404.5340 ELEV-132.34
CP-4	N-669215.2420 E-2119855.3510 ELEV-171.52		

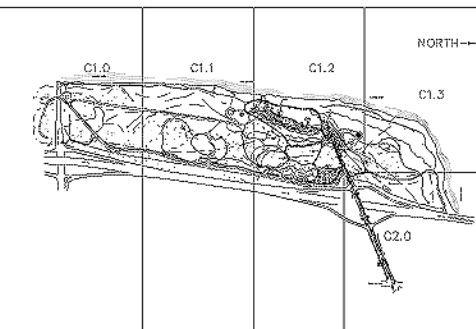
# LEGEND

TP	TELEPHONE POLE
UP	LIGHT POST
OMP	CORRUGATED METAL PIPE
GUY	GUY WIRE
UT	UTILITY POLE
DF	DENSE FOLIAGE
SP	SIGN POST
EC	EXISTING GROUND CONTOUR
FC	PROPOSED FINISHED CONTOUR
CP	CONTROL POINT
EB	ELDER BERRY BUSHES
SM	SANITARY SEWER MANHOLE
FM	PROPOSED FORCE MAIN
SW	PROPOSED SEWER
W	PROPOSED WATER
G	PROPOSED GAS
SD	PROPOSED STORM DRAIN
DT	PROPOSED DISC GOLF TEE @ GRADE
DB	PROPOSED DISC GOLF BASKET
TA	TRAFFIC DIRECTION ARROW
ES	EXISTING SEWER
EW	EXISTING WATER
WPS	WASTEWATER PUMP STATION
FH	PROPOSED FIRE HYDRANT



SCALE: 1"=50'  
5' CONTOURS

DECEMBER 2002

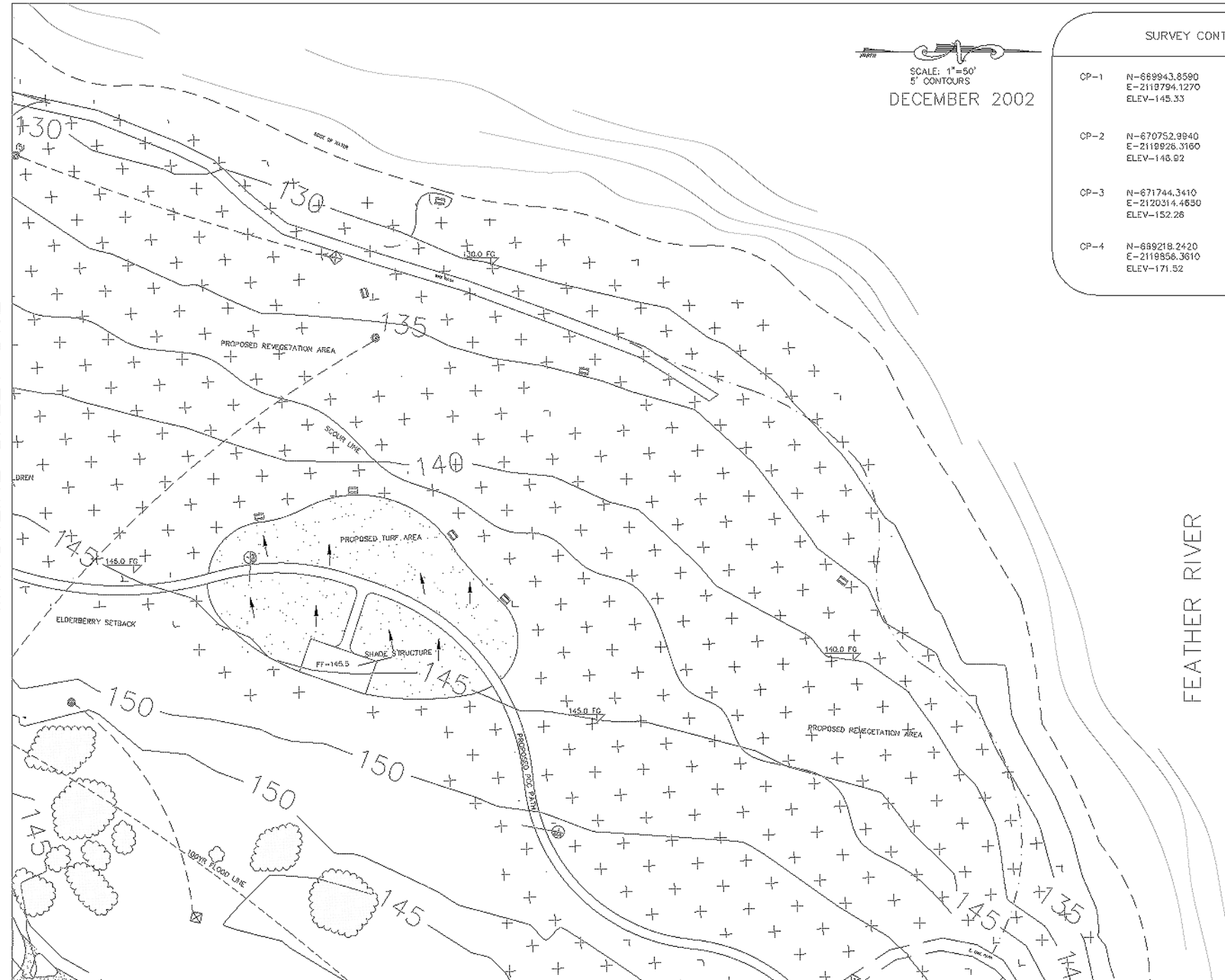


SHEET INDEX

2ND DRAFT

Approved By: _____	Date: _____	FIELD BOOK ELEVATION DATUM STATE OF CALIFORNIA DEPT. OF TRANSPORTATION (CAL TRANS) MONUMENT CM 15.52 ELEV. = 153.109	DRAWN BY: GREG COYNER DESIGNED: GREG COYNER CHECKED BY: A.G.B. SCALE: AS NOTED	APPROVED BY: ALAN GEORGE BROWN DATE: RCE 24578	<b>BBA ENGINEERING</b> CIVIL ENGINEERS • LAND SURVEYORS 2060 Park Ave. Oroville, CA 95965 (530) 534-1811 FAX (530) 534-0908	<b>PROPOSED ON-SITE IMPROVEMENTS RIVERBEND PARK</b> FEATHER RIVER RECREATION & PARK DISTRICT OROVILLE, CALIFORNIA	SHEET <b>C1.2</b> JOB NO. 01-083
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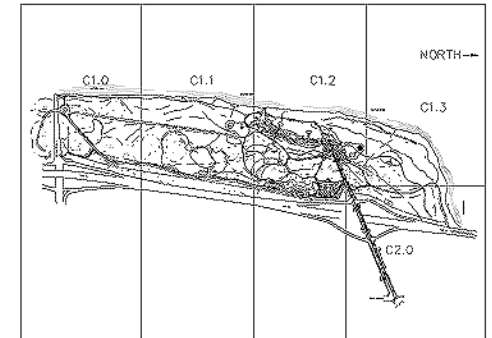
MATCHLINE SHEET C1.2



SCALE: 1"=50'  
5' CONTOURS  
DECEMBER 2002

SURVEY CONTROL POINTS			
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CP-2	N-670752.9840 E-2118926.3160 ELEV-148.82	CP-6	N-667441.5220 E-2119478.1070 ELEV-144.05
CP-3	N-671744.3410 E-2120314.4630 ELEV-152.28	CP-7	N-666981.1680 E-2119404.5340 ELEV-132.34
CP-4	N-669218.2420 E-2118556.3610 ELEV-171.52		

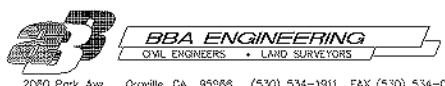
LEGEND	
TP	TELEPHONE POLE
LP	LIGHT POST
CMP	CORRUGATED METAL PIPE
	GUY WIRE
	UTILITY POLE
	DENSE FOLIAGE
	SIGN POST
	EXISTING GROUND CONTOUR
	PROPOSED FINISHED CONTOUR
	CONTROL POINT
	ELDER BERRY BUSHES
	SANITARY SEWER MANHOLE
4" F	PROPOSED FORCE MAIN
6" S	PROPOSED SEWER
8" W	PROPOSED WATER
G	PROPOSED GAS
24" SD	PROPOSED STORM DRAIN
	PROPOSED DISC GOLF TEE @ GRADE
	PROPOSED DISC GOLF BASKET
	TRAFFIC DIRECTION ARROW
6" S	EXISTING SEWER
8" W	EXISTING WATER
	WASTEWATER PUMP STATION
	PROPOSED FIRE HYDRANT



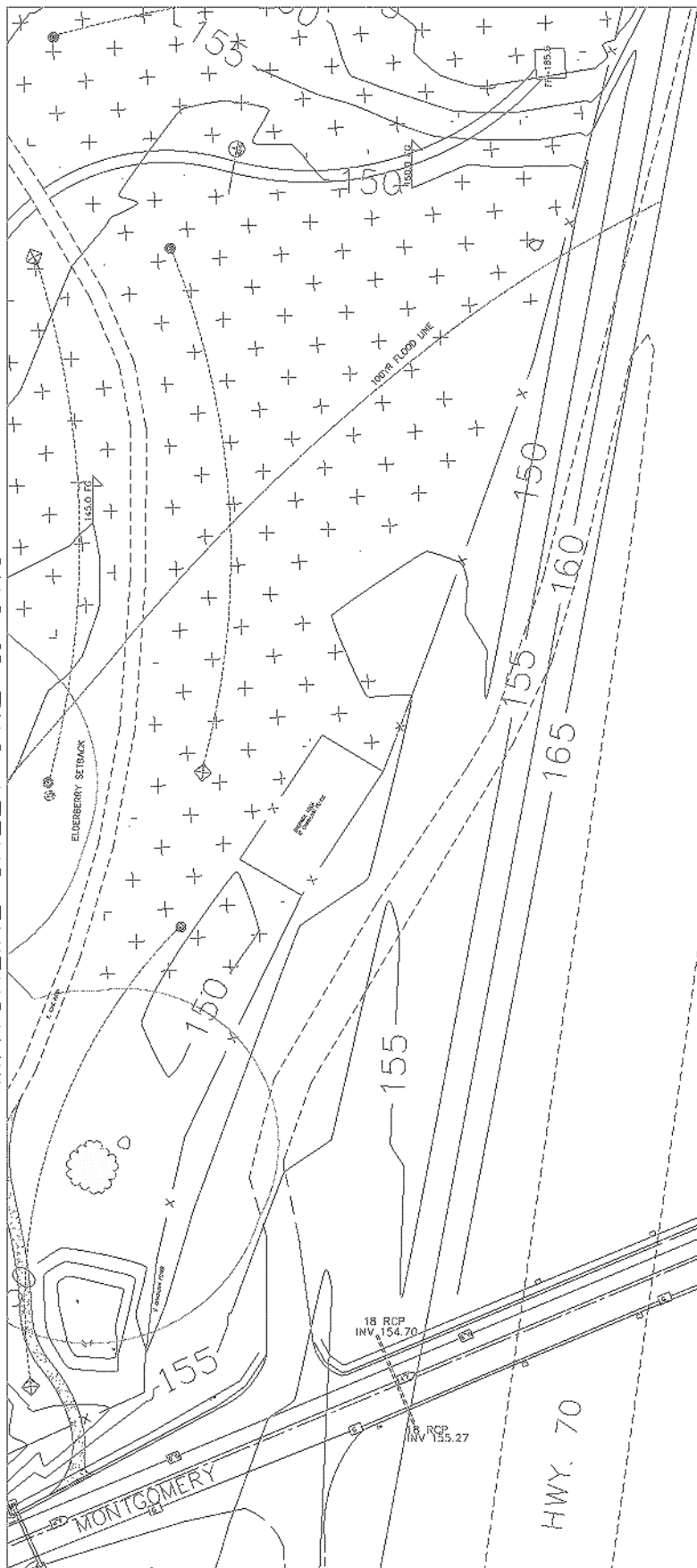
SHEET INDEX

MATCHLINE SHEET C2.0

2ND DRAFT

Approved By: _____	Date: _____	FIELD BOOK	DRAWN BY: GREG COYNER	APPROVED BY: _____	DATE: _____	 <b>BBA ENGINEERING</b> CIVIL ENGINEERS • LAND SURVEYORS 2080 Park Ave. Oroville, CA 95966 (530) 534-1911 FAX (530) 534-0808	<b>PROPOSED ON-SITE IMPROVEMENTS</b> <b>RIVERBEND PARK</b> FEATHER RIVER RECREATION & PARK DISTRICT OROVILLE, CALIFORNIA	SHEET C1.3
---	---	ELEVATION DATUM	DESIGNED GREG COYNER	ALAN GEORGE BROWN	RCE 24578			JOB NO. 01-083
---	---	STATE OF CALIFORNIA	CHECKED BY: A.G.B.					
---	---	DEPT. OF TRANSPORTATION	SCALE AS NOTED					
		(CAL TRANS) MONUMENT						
		CM 15.52						
		ELEV. = 153.109						

MATCHLINE SHEET C1.2 &amp; C1.3
























SCALE: 1"=50'  
3' CONTOURS

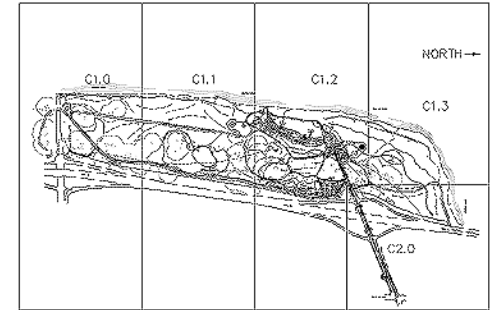
DECEMBER 2002

### SURVEY CONTROL POINTS

CP-1	N-689543.8590 E-2119794.1270 ELEV-145.33	CP-5	N-668467.1370 E-2119580.5690 ELEV-150.88
CP-2	N-870752.9040 E-2119928.3160 ELEV-146.92	CP-6	N-567441.5220 E-2119478.1070 ELEV-144.05
CP-3	N-671744.3410 E-2120314.4850 ELEV-152.26	CP-7	N-566981.1580 E-2119404.5340 ELEV-132.34
CP-4	N-669218.2420 E-2119856.3610 ELEV-171.52		

LEGEND

TP TELEPHONE POLE  
 LP LIGHT POST  
 CMP CORRUGATED METAL PIPE  
 GUY WIRE  
 UTILITY POLE  
 DENSE FOLIAGE  
 SIGN POST  
 EXISTING GROUND CONTOUR  
 PROPOSED FINISHED CONTOUR  
 CONTROL POINT  
 ELDER BERRY BUSHES  
 SANITARY SEWER MANHOLE  
 PROPOSED FORCE MAIN  
 PROPOSED SEWER  
 PROPOSED WATER  
 PROPOSED GAS  
 PROPOSED STORM DRAIN  
 PROPOSED DISC GOLF TEE @ GRADE  
 PROPOSED DISC GOLF BASKET  
 TRAFFIC DIRECTION ARROW  
 EXISTING SEWER  
 EXISTING WATER  
 WASTEWATER PUMP STATION  
 PROPOSED FIRE HYDRANT



SHEET INDEX

2ND DRAFT

Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

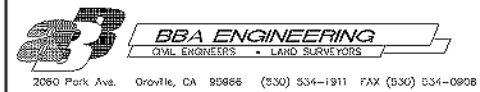
Date \_\_\_\_\_

DATE	NO	REVISION	BY	APP'D

FIELD BOOK
ELEVATION DATUM
STATE OF CALIFORNIA
DEPT. OF TRANSPORTATION
(CAL TRANS) MONUMENT
GM 15.52
ELEV. = 153.109

DRAWN BY:	GREG COYNER
DESIGNED	GREG COYNER
CHECKED BY:	A.G.B.
SCALE	AS NOTED

APPROVED BY:	DATE
ALAN GEORGE BROWN	RCE 24578



**PROPOSED OFF-SITE IMPROVEMENTS  
RIVERBEND PARK**  
FEATHER RIVER RECREATION & PARK DISTRICT  
OROVILLE, CALIFORNIA

SHEET	C2.0
-------	------

JOB NO. 01-083

## **Appendix E:**

Nelson Park Plan





# ■ NELSON PARK ■

LAND IMAGE LANDSCAPE ARCHITECTS 627 BROADWAY CHICO, CA 95926 (530) 893-1513

## WETLAND MITIGATION

Delineated By:

ECO-ANALYSTS  
Albert Beck, Ph.D.  
3028 Esplanade, Suite A  
Chico, CA 95973

GALLAWAY AND STUART  
CONSULTING  
1388 Longfellow Avenue, Suite M  
Chico, CA 95926

### LEGEND

	ROADWAY
	PATHWAY
	HARDSCAPE
	GATE
	FIELDS
	LIGHTING
	BUILDING
	DETENTION BASIN

### LEGEND

SYMBOL	DESCRIPTION	MODEL/REMARKS	DETAIL
(A)	PROPERTY LINE	---	
(B)	LIMIT OF WORK	---	
(C)	TRASH ENCLOSURE	---	
(D)	FENCE	---	
(E)	PATH	---	
(F)	ENTRY SINEAGE	---	
(G)	DECORATIVE CONCRETE	---	
(H)	NEW ARTIFICIAL SEASONAL WETLAND AND FLOW BASIN	---	
(I)	INTERPRETIVE PANEL	---	
(J)	OVERFLOW SHALE	---	
(K)	STEEL VINE TRELLIS	---	
(L)	CLIMBING WALL	---	
(M)	CHILDRENS PLAY AREA	---	
(N)	CABLE ON TRELLIS	---	
(O)	RESTROOM	---	
(P)	ELEVATED BANDSTAND	---	
(Q)	ELEVATED PICNIC AREA	---	
(R)	DROP OFF AREA	---	
(S)	OVERLOOK TOWER	---	
(T)	SOCCER FIELD	---	
(U)	ADULT SOFTBALL FIELD	---	

### LEGEND

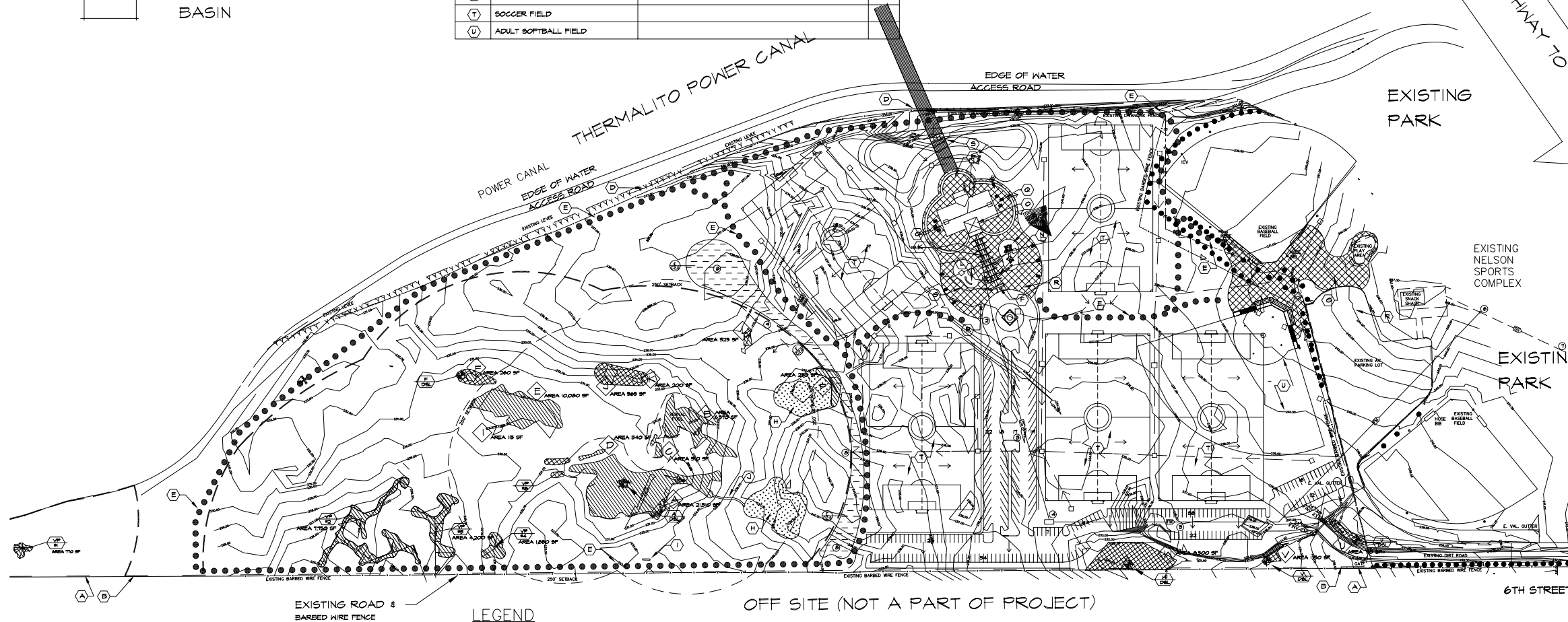
1. CONSTRUCT 251 LF 6" GRAVITY SEWERPIPE
2. CONSTRUCT SANITARY SEWER MANHOLE
3. CONSTRUCT 446 LF 6" GRAVITY SEWERPIPE
4. CONSTRUCT SANITARY SEWER PUMP STATION
5. CONSTRUCT 1112 LF 4" (PRESSURE) SEWERPIPE FORCEMAIN
6. CONSTRUCT SANITARY SEWER MANHOLE
7. EXISTING GRAVITY SEWERPIPE
8. STORMWATER MANAGEMENT DETENTION POND
9. OUTLET PIPE & EMERGENCY OVERFLOW

### SEASONAL WETLAND LEGEND (VERNAL POOLS WHERE MARKED)

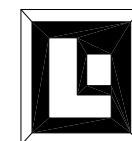
SAMPLE SITE	WETLAND AREA	PROPOSED FILL AREA OPTION B'
VP 1	2,510 SF	
VP 2	6,570 SF	
VP 3	510 SF	
VP 4	840 SF	
VP 5	10,080 SF	
VP 6	260 SF	
VP 7	DOES NOT EXIST	
VP 8	DOES NOT EXIST	
VP 9	115 SF	
VP 10	565 SF	
VP 11	200 SF	
VP 12	120 SF	120 SF
VP 13	4,190 SF	4,190 SF
VP 14	550 SF	
VP 15	1,250 SF	1,250 SF
VP 16	6,130 SF	6,130 SF
VP 17	1,980 SF	1,980 SF
VP 18	DOES NOT EXIST	
VP 19	640 SF	
VP 20	710 SF	
VP 21	650 SF	
VP 22	7500 SF	
VP 23	710 SF	
VP 24	4,200 SF	
VP 25	1,850 SF	
VP 26	600 SF	600 SF
VP 27	1,056 SF	1,056 SF
VP 28	1,520 SF	1,520 SF
VP 29	100 SF	
TOTAL WETLANDS	79,320 SF (1.82 ACRES)	
* WETLANDS DISTURBED		6,170 SF
* VERNAL POOLS DISTURBED		11,076 SF
* TOTAL		17,246 SF

SOIL SAMPLING LOCATION  
SAMPLE SITE  
DESIGNATED SAMPLING LOCATION

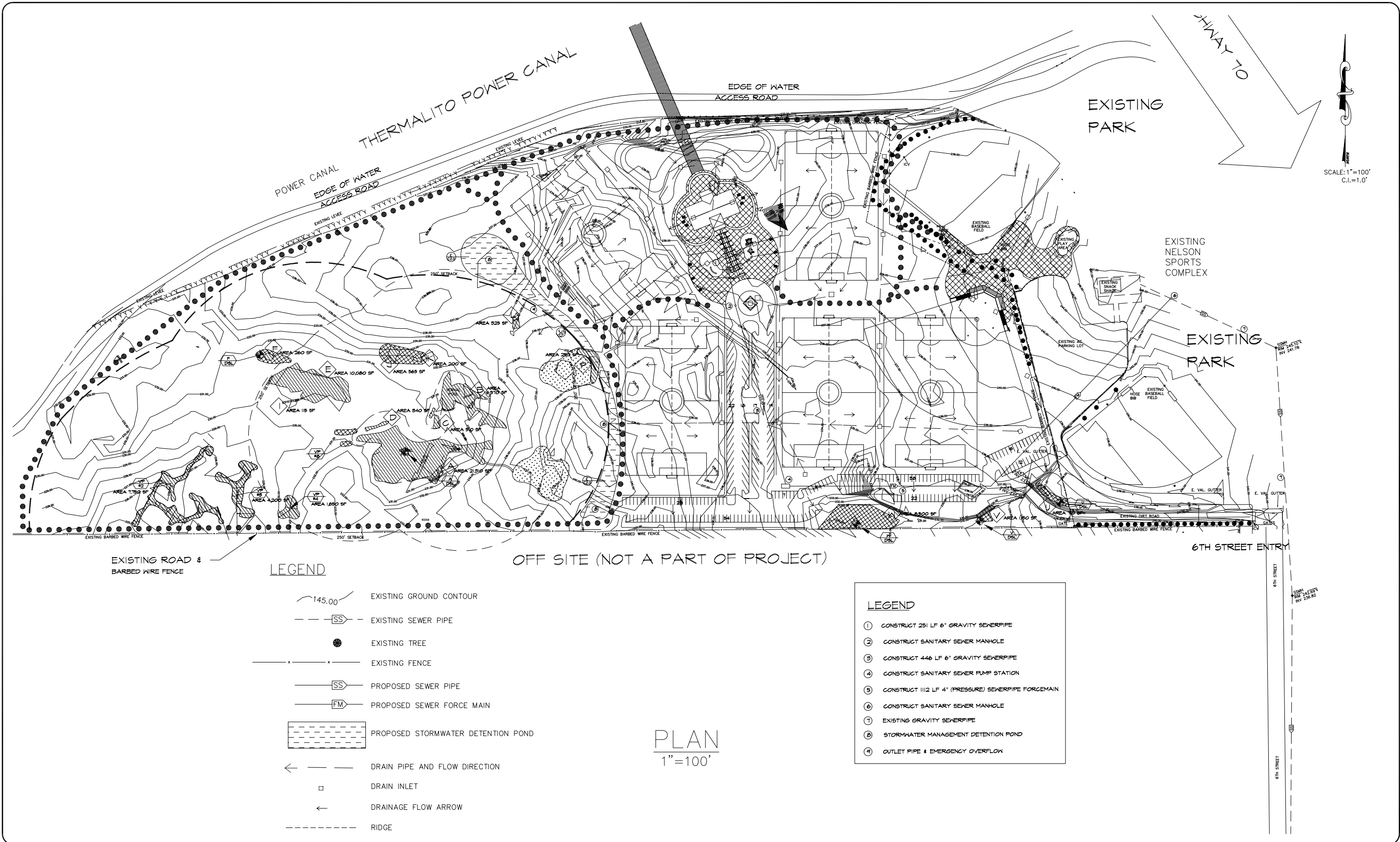
VP - VERNAL POOL  
T - TYPICAL HABITAT  
D - DISTURBED HABITAT  
M - MODERATE HABITAT  
DNE - DOES NOT EXIST  
? - WETLAND STATUS QUESTIONABLE




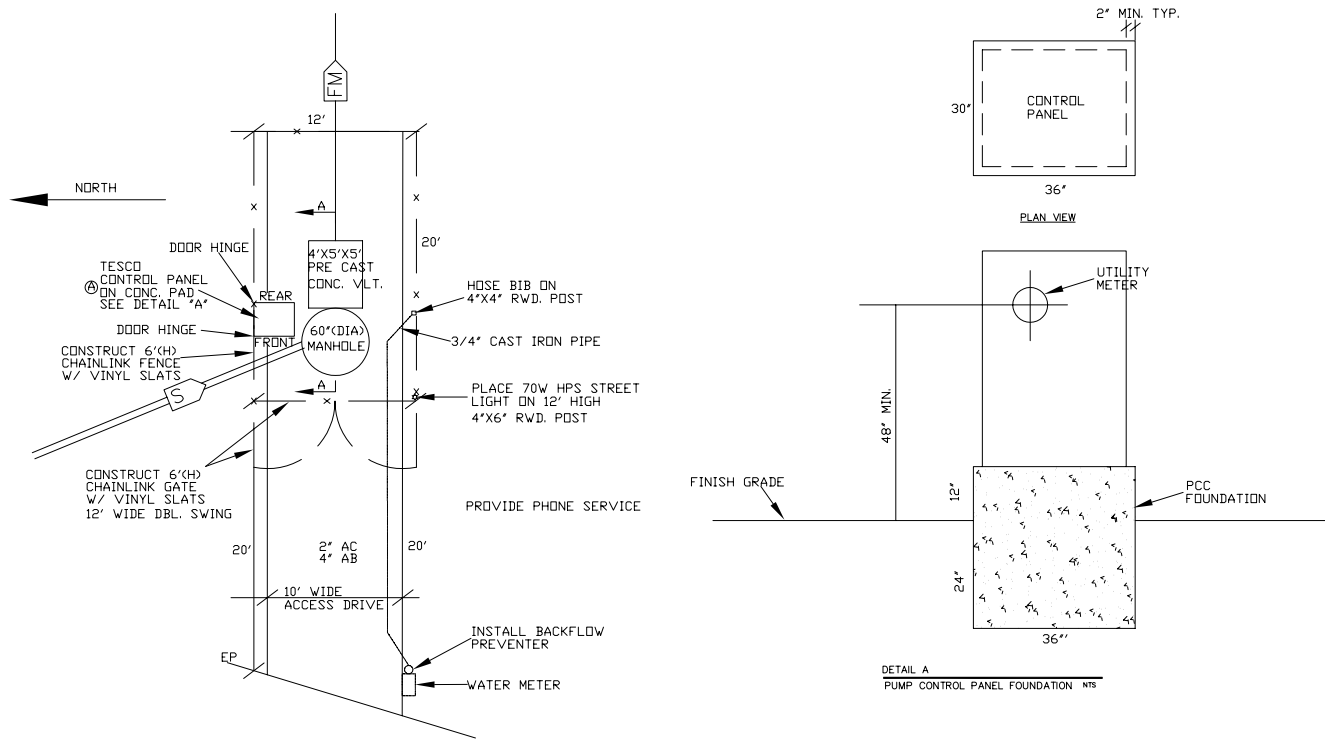
Surveyed and Mapped By:



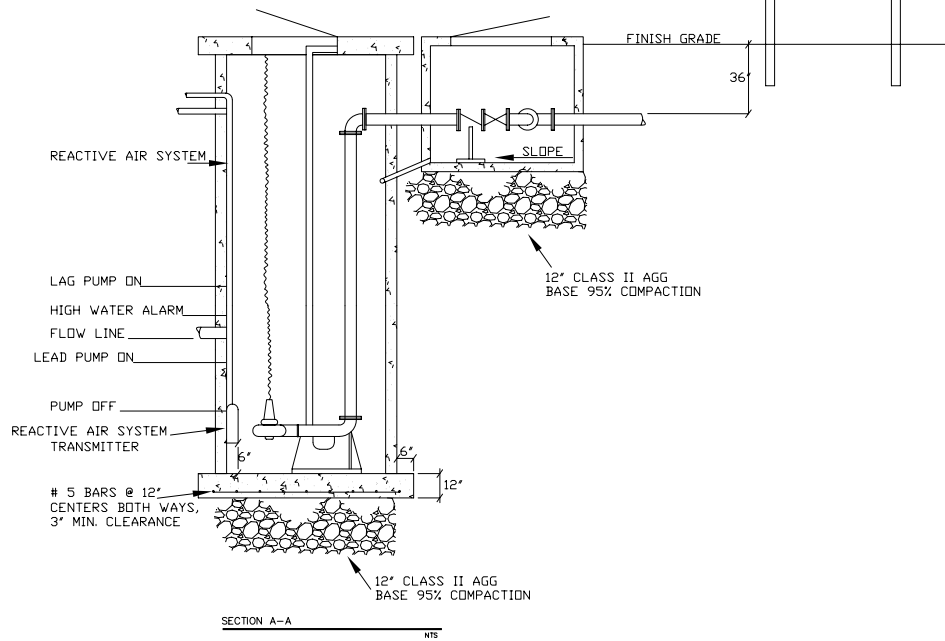
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JANUARY 11, 2000 E-A  
FEBRUARY 21, 2001 G AND S



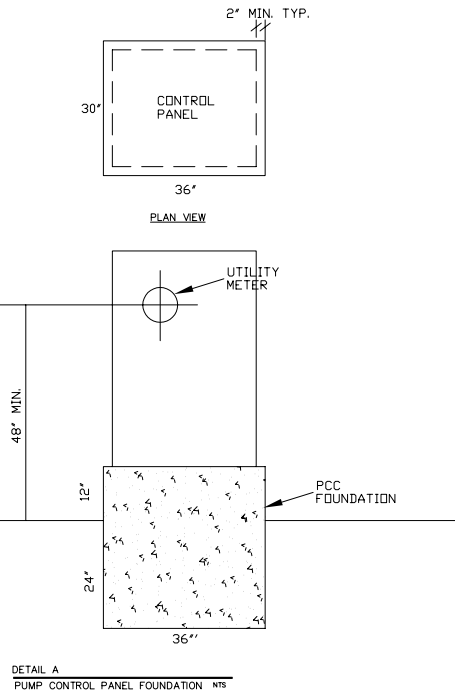
Approved By:	Date	FIELD BOOK	DRAWN	APPROVED BY:	DATE	 BBA ENGINEERING CIVIL ENGINEERS • LAND SURVEYORS 2060 Park Ave. Oroville, CA 95966 (530) 534-1911 FAX (530) 534-0908	NELSON SOCCER FIELD SEWER & DRAINAGE PLAN NELSON AVE. PARK OROVILLE, CA 95965	SHEET
SCOTT LAWRENCE		ELEVATION DATUM	DESIGNED	ALAN G. BROWN	RCE 24578			C1.0
FEATHER RIVER RECREATION		T.I.D. BRASS CAP V-48	CHECKED					JOB NO. 02-057
DISTRICT GENERAL MANAGER & PARK DISTRICT		SET IN NORTH END OF CURB	SCALE					



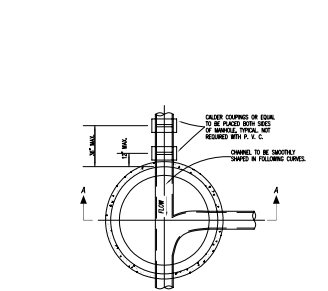
PLAN  
SANITARY SEWER PUMP STATION



SECTION A-A

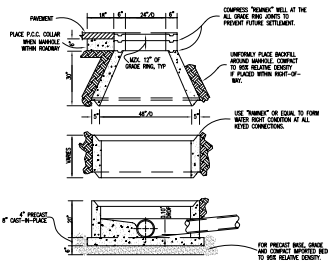


DETAIL A  
PUMP CONTROL PANEL FOUNDATION



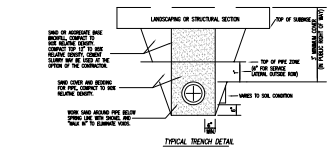
SANITARY SEWER MANHOLE DETAIL

- NOTES:
1. THE HEIGHT OF THE MANHOLE SHALL BE 0.10 FEET BELOW THE HEIGHT (S) INTO THE MANHOLE.
  2. THE ELEVATION OF EACH INLET PIPE SHALL BE SET BY ADJUSTING THE GRADE OF THE INLET PIPE OR IMPROVING A VERTICAL CURVE TO MAINTAIN THE 0.10 FEET DROP.
  3. IF THE ELEVATION DIFFERENCE BETWEEN THE INLET AND OUTLET IS TO EXCEED 30 INCHES, AN SS - 02 SANITARY MANHOLE SHALL BE USED WITH PROPER SLOPING OF THE CONCRETE.
  4. MANHOLE BASE SHALL BE PRE CAST EXCEPT AS ALLOWED UNDER NOTE 5.
  5. A CAST IN PLACE BASE MAY BE USED ONLY IF CONDITIONS PRECLUDE THE USE OF A PRE CAST BASE AND ONLY INTO THE BASE PORTION OF THE DIRECTION OF FLOW. WORKING A CAST IN PLACE BASE SHALL MEET THE FOLLOWING REQUIREMENTS:
    - A. ALL CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI AND A SLUMP OF 2-4 INCHES.
    - B. THE SURFACE OF A PREPARED SURFACE SHALL BE USED TO MAINTAIN AN UNIFORMITY IN THE BASE AND AT THE TOP OF THE CONCRETE. THE SURFACE SHALL BE PLACED DIRECTLY IN THE SET BASE AND THE CONCRETE MANHOLE SHALL BE PLACED ABOVE THE CAST AND PLACED DIRECTLY WITH BASE AND SURFACE OF MANHOLE.
  6. MANHOLE SHALL BE LEAK TESTED PER CITY SPECIFICATIONS.
  7. FINAL PUMP ELEVATION OF MANHOLE TO BE ESTABLISHED IN FIELD.
  8. TOP OF MANHOLE TO BE FITTED WITH CHAMFER TO USE OR TO BE ASSEMBLY.
  9. WHEN MANHOLE IS LOCATED OUTSIDE OF PAVED AREAS, CONCRETE GRATE SHALL BE PLACED ABOVE THE MANHOLE TO BE USED FOR TRAFFIC AND TO BE USED FOR TRAFFIC.



SANITARY SEWER MANHOLE DETAIL

STANDARDS FOR SANITARY SEWER MANHOLE SS-02

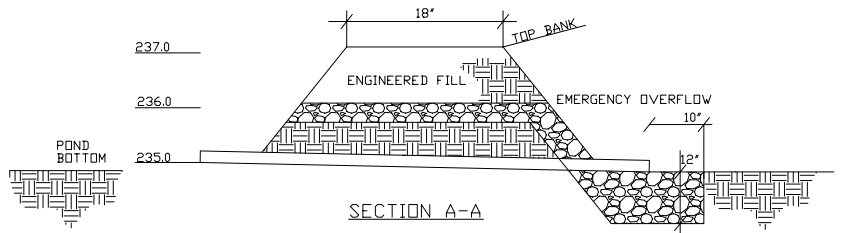


TYPICAL TRENCH DETAIL

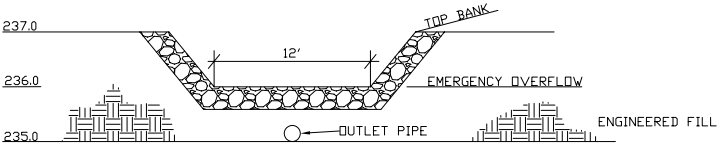
- NOTES:
1. TRENCH LAYOUT SHALL BE AS SHOWN IF A TRENCH IS TO BE USED FOR A TRENCH. IF A TRENCH IS TO BE USED FOR A TRENCH, IT SHALL BE USED FOR A TRENCH.
  2. THE ELEVATION OF THE TRENCH SHALL BE SET BY ADJUSTING THE GRADE OF THE TRENCH OR IMPROVING A VERTICAL CURVE TO MAINTAIN THE 0.10 FEET DROP.
  3. IF THE ELEVATION DIFFERENCE BETWEEN THE INLET AND OUTLET IS TO EXCEED 30 INCHES, AN SS - 02 SANITARY MANHOLE SHALL BE USED WITH PROPER SLOPING OF THE CONCRETE.
  4. MANHOLE BASE SHALL BE PRE CAST EXCEPT AS ALLOWED UNDER NOTE 5.
  5. A CAST IN PLACE BASE MAY BE USED ONLY IF CONDITIONS PRECLUDE THE USE OF A PRE CAST BASE AND ONLY INTO THE BASE PORTION OF THE DIRECTION OF FLOW. WORKING A CAST IN PLACE BASE SHALL MEET THE FOLLOWING REQUIREMENTS:
    - A. ALL CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI AND A SLUMP OF 2-4 INCHES.
    - B. THE SURFACE OF A PREPARED SURFACE SHALL BE USED TO MAINTAIN AN UNIFORMITY IN THE BASE AND AT THE TOP OF THE CONCRETE. THE SURFACE SHALL BE PLACED DIRECTLY IN THE SET BASE AND THE CONCRETE MANHOLE SHALL BE PLACED ABOVE THE CAST AND PLACED DIRECTLY WITH BASE AND SURFACE OF MANHOLE.
  6. MANHOLE SHALL BE LEAK TESTED PER CITY SPECIFICATIONS.
  7. FINAL PUMP ELEVATION OF MANHOLE TO BE ESTABLISHED IN FIELD.
  8. TOP OF MANHOLE TO BE FITTED WITH CHAMFER TO USE OR TO BE ASSEMBLY.
  9. WHEN MANHOLE IS LOCATED OUTSIDE OF PAVED AREAS, CONCRETE GRATE SHALL BE PLACED ABOVE THE MANHOLE TO BE USED FOR TRAFFIC AND TO BE USED FOR TRAFFIC.

DETAIL

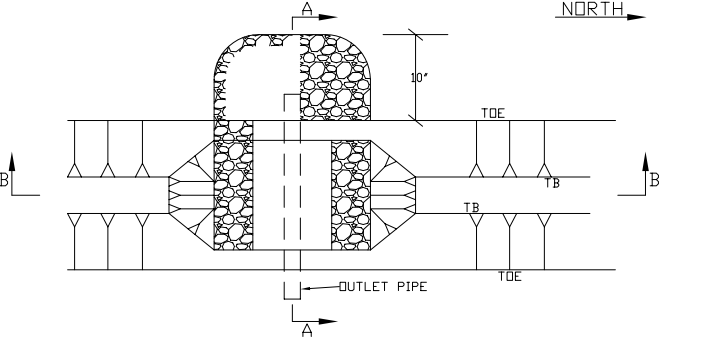
STANDARDS FOR TRENCH DETAIL ADAPTING SANITARY SEWER PIPE



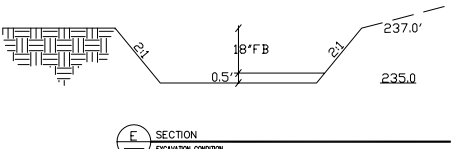
SECTION A-A



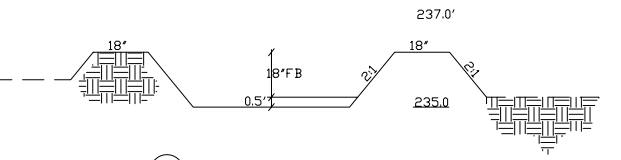
SECTION B-B



PLAN  
DETENTION POND OUTLET PIPE & EMERGENCY OVERFLOW



SECTION  
EXCAVATION CONDITION



SECTION  
EMBANKMENT CONDITION